Southern California's Computer Magazine

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He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), led the successful 1993 citizen effort making state legislation and statutes available via the public Nets without service charge and served ■ the 1995 California Secretary of State's Electronic Filings Advisory Panel advocating online campaign finance disclosures and the 1996 state Senate's Task Force on Electronic Access to Public Records.

He founded InfoWorld, was founding host of PBS' *Computer Chronicles*, founding editor of *Dr. Dobb's Journal*, served half a decade on the Board of Directors of Autodesk, Inc., and has chaired various computer and mathematics organizations. Warren has received the John Dvorak Lifetime Achievement Award (1995), Hugh M. Hefner First Amendment Award (1994), James Madison Freedom-of-Information Award from the Society of Professional Journalists—Northern California (1994) and Electronic Frontier Foundation Pioneer Award in (1992, its first year).

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BY PAUL HOFFMAN

Industry Insights

Price Realities Come (Slowly) To The Internet

It's wonderful

to be writing about the Internet so often these days. Fifteen years ago, when we wrote about "computers," we could be talking about mainframes, minicomputers (remember them?), or the new-fangled "personal computers" that were just starting to get noticed in the mainstream. The word "computer" was overly broad, and therefore let writers talk about almost anything. Today, the word "Internet" lets us do the same thing, since it ■ impossible to precisely define what the Internet is.

Because defining the Internet ■ so hard, it ■ also difficult to say whether ■ particular event that affects the Internet will "hurt" it or "save" it. This month's case in point: The trend, started by Internet backbone provider UUNET Technologies, to charge smaller Internet providers connecting fees. Some people saw this ■ the beginning of the end for the Internet, which would end up being less than universal;

others saw this as the healthiest thing that could happen, making everyone more responsible for the amount of traffic they generate.

The issues here are fairly US-centric, because the US has much more competition in its Internet market than other countries. In fact, in many countries, ■ order ■ become ■ Internet Service Provider (ISP), you have to go through a heavy bureaucratic process with the government or the national telephone company; in return, that agency takes care of all the Inter-ISP connections. However, as more and more countries start following the US model (for better or worse), they will confront the same large-scale Internet issues we are seeing today.

Wh■ Is Your Peer?

The problem UUNet brought to a head is known as "peering fees."

The Internet is made up of thousands of segments, all privately owned. The points where two segments connect are controlled by routers.

Many of the connection points connect segments from two different companies, and the routers must be able to determine the best way to move data from one company's lines to the other. Even when the Internet was basically a US government-owned system, routers performed the same tasks.

Until recently, the large companies that own the long-haul segments ■n the central part of the Internet let smaller companies set up routers to exchange data for free. The reasoning was that the customers of the large companies wanted access to the data of the small companies just as much as the customers of the small companies wanted their data to travel easily and quickly to the large company's network. This passing of packets (messages) at one point is called "peering" because, in the old days, everyone was essentially a peer of each other, and the large companies weren't all that much different from the small ones.

This whole arrangement may sound a bit odd because you would think that each network would have to peer with every other network. In the old days of the Internet, that was exactly what happened. However, as some players grew faster than others, the largest networks allowed smaller networks to pay them to move their data out over the Internet and, at the same time, do all the peering arrangements. This meant that peering was less complicated than it might be, and helped make the Internet more efficient at the same time.

> *It is difficult to say whether a particular event that affects the Internet will "hurt" it or "save" it. This month's case in point: The trend, stared by Internet backbone provider UUNET Technologies, to charge smaller Internet providers connecting fees.*

Transit Costs

Peering is simply the exchange of packets, not an agreement to take them any further than the next hop on their journey. If you're on network A, and you want to get a packet to network C, you have two options: Directly peer with C, or have an agreement with some other network, B, to carry your packets from you to C. Having someone else carry your packets for you is called "transiting," and it is the business glue that holds the Internet together. Almost all transiting agreements in the US are "complete" arrangements, meaning that network B agrees to take all packets from network A, not just packets destined for a few particular networks, and deliver them.

Transit agreements also include service agreements. The network transiting your data also agrees to maintain the hardware needed for getting the data to you and from you. For many years, the service part of the agreements was pretty much taken for granted, but as the Internet has become more and more complex, it has become harder for the large backbone networks to provide the same level of service for the same price. For example, it is getting much harder for anyone to find technicians who understand how to configure and maintain today's routers: most of the people who could learn this kind of arcane knowledge already are working in the field.

Peering Helps

Which brings us back to the problem that UUNET finally decided to address. Because the Internet is a mesh of interconnections, there are lots of ways to route packets, which unfortunately means that there are lots of ways to do it wrong. Proper peering helps makes the Internet more efficient because it helps move the packets from one place to another with the least number of "hops" between routers. If you think of the Internet as wires connected by routers, you'll see that it's not the wires that slow down a packet, it's going through too many routers.

UUNET and the other major backbone providers had allowed free peering, even to small networks, mostly because free peering had always just been the way that things happened. About two months ago, there were rumors that UUNET was not renewing its free peering agreements, and there was a great deal of fear that without free peering, the Internet would fall apart. The logic was that if small regional networks had to pay for peering with everyone else, the costs would be prohibitive.

After the rumors spread to the press, UUNET then made an announcement that the rumors were true, and other major backbone carriers also started to review their free peering arrangements. UUNET emphasized that it was still willing to make peering arrangements with small networks, just not free ones. UUNET also emphasized that it was still making free peering arrangements with large networks that UUNET

Industry Insights continued

considers its peers, namely those with national backbones and many interconnection points.

The concerns about the end of free peering are probably overblown, since peering is only one way to connect—there's always transit agreements. In fact, although transit agreements are more expensive than what UUNET wants to charge for peering with small providers, transit agreements give small networks much more service. Because a transit agreement says that UUNET (or any other large network) will take all of the packets and do all of the routing for them, smaller networks actually have less service they have to provide their customers.

It is clear, however, that smaller networks will probably have to pay more in the future for their connection to the rest of the Internet. They will either have to pay multiple peering charges, or pay more for their transiting. These costs, of course, will have to be passed on to their users, who are often smaller ISPs and businesses. However, these costs should not be all that much, and may even result in better Internet connectivity for everyone as people start to pay for what they actually use.

The "S" in ISP Should Really Mean Service

Much of the problem with today's Internet is that people are unclear about what they are paying for. End users often think that they are paying for access, not content, not for service. They go with ISPs who, in fact, don't give very good service, and therefore can charge very little. The major backbone providers found that the free peering was often not very useful because what they were providing a lot of service to ISPs who were clueless about what they were doing.

ISPs who are more service-oriented discovered a few years ago that the best way to provide high-quality connectivity for their customers was to have more than one transit agreement with backbone providers. That way, when one provider was down or having technical problems, their packets still made it to the Internet, albeit usually much more slowly. Having more than one transit provider takes some advanced technical expertise, but it gives the users much better, and more reliable, service.

The Internet, then, is becoming more and more like the PC business. You can go to a computer dealer and buy a cheap computer without caring much about the parts inside of it or about how good the dealer's service is, and you might be fine. On the other hand, if the dealer sells computers with more reliable parts, which were probably more expensive than the lowest-end parts, you are less likely to need service from the dealer, and when you do, the dealer may be better able to determine the problem quickly.

Some people only want to buy from "the top of the ladder," and they often do this by buying computers direct from the largest manufacturers and Internet service direct from the backbone providers. However, being a tiny customer from a top-tier provider may actually get you less service (and certainly cost more) than buying from a quality reseller. Small and medium-sized networks are discovering this as they have to refigure their costs of connecting to the core Internet and determine how they will spread those costs to their customers. ∎

MICROTIMES INDEX CLIMBS TO A NEW HIGH

Investors bumped up stocks last month, after learning that the Federal Reserve was not planning on increasing interest rates. The MicroTimes Stock Index followed the national indices into higher territory, rising 112.76 points, or 1.24%, to an all-time high of 9223.00. Advancers outmatched decliners by a 23 to 16 count, while companies achieving new highs towered over those reaching new lows by 12 to 0.

Similarly, the Dow Jones Industrial Average continued its northbound climb, increasing 168.67 points, or 2.36%, to a close of 7305.29.

Turning To Companies In The Spotlight

Xerox helped push our index to higher ground in last months' trading. Standard ■ Poor's affirmed its rating on the company, after Xerox announced its agreement ■ acquire the remaining minority interest in Rank Xerox from the Rank Group for 940 million British pounds (approximately $1.5 billion). Xerox shares were up $3.00, or 4.72%, to a close of $53.50.

Netcom's stock price climbed last month, amid speculation of ■ merger. Intermedial Communications said it would buy Digex, Inc., which fueled the fire of speculation about more industry consolidation. Consequently, shares of Netcom rose $1.75, or, 12.96%, to close at $15.25.

Intel did not fair as well in last month's trading. Demand in Europe unexpectedly weakened, without showing signs that competitors were gaining market share there. A spokesman for the company, Heiner Genzken, said the company doesn't know why demand softened. In response, Intel slid $15.63, or 9.84%, to end the period at $143.13.

Shares of AT&T rallied last month, after chairman Robert Allen announced at the annual meeting that boosting the company's stock price is his top priority. In response, the stock rose $3.00, or 9.23%, to ■ close of $35.50. It was an encouraging start to bringing the value of the stock back up to the $45 per share that it closed at a year ago. ■

Government For Sale!

...For Those Wealthy Enough To Buy It

It's us against them, and we're losin'—big-time!

"Us": the average citizen-victims of California, and the businesses that aren't big enough to buy special treatment. Businesses...those evil, job-producing, tax-paying operations that try to produce products and services if they have any spare time after fulfilling endless regulations and demands in this anti-business state. (If you don't believe it's a nightmare, just try risking your life's savings to open a business with offices, equipment and employees in this state.)

"Them": the Forces of Darkness. The bucks-hustling bureaucrats who can never find enough money to spend; the pugnacious public-employee unions who say to hell with the public's interests; the posterior-protecting politicians who fear that citizens might actually find out what they're doing; and the wealthy special interests who buy their votes.

At issue this month is the unending battle for modern (electronic) and equal public access to modern (computerized) public records: public information that local and state agencies create or collect from us at the point of a gun (under force of law), computerize for their internal convenience and cost-savings, and maintain to better and more efficiently perform the parts of their mission and goals that they choose to perform—all ■ significant taxpayer expense.

The Law Ignored

Local and ■■■■ agencies are required by law to provide public ■■■■■ to their tax-prepaid public records for public review, and to provide copies of those public records to any requester for no more than "the direct ■■■■ of duplication."

Although the California Public Records Act (CPRA) has required this for decades, few agencies consider it anything more than ■ inconvenient nuisance, and most bureaucrats or politicians appear ■■ consider it an insignificant element of their mission and goals—except, of course, for the information that they want to publicize.

But the first sentence of the CPRA states, "the Legislature, mindful of the right of individuals to privacy, finds and declares that access to information concerning the conduct of the people's business is a fundamental and necessary right of every person in this state." [§6250, boldface added].

Without timely access to adequate information on which to base sound decisions about the process of our own governance, the rights ■■ vote, speak, publish and petition for redress of grievances are an empty pretense of freedom and democracy; façade without substance.

Half ■ Decade, And Still Waiting

In October of 1992—as an public-records electronic-access "expert"—I attended a meeting in Scrappymento (Hah!—fat chance!) on modernizing the badly-outdated CPRA. The meeting had ■ broad spectrum of groups represented, although it was convened by two of the state's leading open-government advocates—Tom Newton, legal counsel and lobbyist for the California Newspaper Publishers' Association (CNPA) and Terry Francke, director and lobbyist for the tiny-but-

potent California First Amendment Coalition (CFAC). Ted Prim, a career attorney and public records expert from the California Attorney General's office was there—and has proven to be a formidable defender of bureaucracies, against modernizing free or copying-cost public access ■ public records (details below).

Teachers' union representatives were there, zealously seeking expanded access to school budget details—especially details of any funds they could pursue in their closed-shop collective bargaining efforts. However, the teacher reps were equally zealous about continuing to prohibit any public access ■■ teacher evaluations or disciplinary hearings against teachers, much less citizen or press access to complaints filed by students or parents against teachers. Gotta protect employee privacy, ya know—and to hell with the public's interest in overseeing teachers' quality and performance. After all, it "only" concerns the future of our society.

(Note: 80% to 90% of educational tax funds—which compose about 50% of the state's total expenses—are paid for salaries and benefits. These massive allocations of public funds are decided almost entirely in secret labor negotiations, with only the final result rubber-stamped in a public meeting.)

There was a meeting several years later, convened for the same purpose under legislative auspices. It began with a belligerent tirade by the union rep for the California Correctional Peace Officers Association "against public access to

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prison disciplinary information. When he finished, he stormed out, snarling a final threat, "I've got just one thing to add—CCPOA!"

The CCPOA is one of the largest political donors in the state, and known as one of the most powerful—in the event that you were wondering why our tax-paid prison guards are among the highest-paid law officers in the nation.

Like all other meetings about modernizing the CPRA, this meeting died a quick death.

Campaign Finances Still Hidden In Plain Sight

Through 1995, I served on Secretary of State Bill Jones' Electronic Filings Advisory Panel, which produced recommendations for how to electronically file and provide timely online public access to campaign finance disclosures—currently "available" only in mountains of misfiled paper in far-distant government offices.

To date, the Panel recommendations have gone nowhere—repeatedly sunk by coy Demopublicans and Republicrats alike. Gotta protect the privacy of those shy vote-buyers, ya know.

That endless fight is continuing. Get latest details from Kim Alexander kimalex@netcom.com , executive director and janitor of the California Voter Foundation (http://www.calvoter.org).

The Latest Farce

Through much of the last year, I've wasted time running up to Sacramento as a member (pro bono, as always) of the California State Senate Task Force on Electronic Access to Public Records, created in 1996 by State Senator Quentin Kopp (Ind.-San Francisco). Same issue, same result, so far.

Originally, I had hopes for this Task Force; Kopp used to support robust, public access to our government. But many of us are wondering if he's sold out the principle of modern public access—or has just lost control of his staff. Kopp never attends meetings of his own task force; it's run by his junior aide, Teri Burns.

Although it's unclear who is and is not a member of the task force—people wander in and out from one meeting to the next—as far as I can tell,

> The Department of Motor Vehicles sells our personal data for more than $45 million per year. That *is* why you gave the DMV your personal information ... isn't it?

I'm the only citizen member, although a librarianship grad student sometimes attends. That is, I'm the only one who is not a paid lobbyist, information peddler, or tax-paid bureaucrat (lobbying for their self-interests, which may or may not match the public's interests).

Much worse: I'm one of the few members advocating free or copying-cost-only access to our public records. Most of Kopp's appointees represent self-serving local and state agencies overseen by self-serving politicians.

I snarl that they are "self-serving" because—almost without exception—they are either tenaciously trying to reduce the scope of public access that has been required for decades, or ardently advocate peddling our tax-prepaid public records back to us—if the copies are in a useful, computerized form—at profiteering rates far in excess of the traditional "direct cost of duplication."

Backed by the Attorney General's Ted Prim, they say paper copies fulfill the copy requirement of the CPRA—that online access or digital copies of already-computerized public records are "enhanced" records and "enhanced" access!

I refuse to have my name any longer associated with this loaded task force and its latest recommendation (as of my June 2nd press deadline), below, so—by copy of this column—I quit!

Modern Access For Those Who Can Buy

The bureaucrats who dominate the task force provided a majority rubber-stamp for the following recommendations (the first two are great; the last one sucks!)

1 Amend Kopp's Senate Bill 74 to delete from the CPRA the major anti-access loophole that says, "Computer data shall be provided in a form to be determined by the agency."

(Good riddance! Bureaucrats have used this for decades, to refuse to provide computer copies of computerized public records!)

2 Add a mandate that, "Agencies shall provide a copy of an electronic record in the format requested, unless, in light of surrounding circumstances, it is not reasonable to do so providing

Realizable Fantasies *continued from page 33*

ed that the requested format is one which has been used by the agency *for* use or for provision to other agencies."

[In spite of the dangerously weasely language, we've pleaded that this be required for years!]

But they also recommended adding the following, demolishing decades of the CPRA's crucial tradition of limiting "copying" fees to "direct cost of duplication".

"Electronic copies of records shall be made promptly available upon payment of fees as follows:

"(1) Except when the records are requested for a commercial purpose, electronic copies of records shall be made available upon payment of fees representing the direct cost of duplication or a statutory fee. For purposes of this section, 'commercial purpose' means any use that furthers the commercial, trade, or profit interests of the requester or person on whose behalf the request is made."

["Commercial" ISPs, BBSes, CD-ROM publishers, feature magazines, wee-fee public-inter-

est attorneys, and so on, are excluded] I specifically pleaded that at least explicitly include libraries, academic institutions, nonprofit organizations and freelance researchers, and Ted Prim explicitly stonewalled it.]

"Commercial purpose does not include any request made by a person who, through contract *or* employment, *is* a publisher, editor or reporter with a news gathering organization and makes the request in that capacity."

[Approved by the CNPA's board, this *is* a major reversal of California newspapers' long-standing public-records position. Until now, they have always demanded equal access for all, that the press not be made a privileged class.]

"(2) For requests in which the information is to be used for any commercial purpose, the records shall be made available upon payment of the actual cost of providing the record, which shall include the costs of search, retrieval, review, segregation, and duplication, plus *a* percent surcharge, or a statutory fee. All funds collected by an agency from

> I'm one of the few members of Quentin Kopp's task force advocating free or copying-cost-only access to our public records. Most of Kopp's appointees represent self-serving local and state agencies overseen by self-serving politicians.

the x percent surcharge shall be used by the agency exclusively for the purposes described in section 6253 (that is, for anything in any way related to public-records access—copy machine rentals, buying paper and probably even depreciation on the building that houses the records)."

This bureaucrats' task force also proposed a Statement-of-Legislative-Intent to clarify 'reasonable" circumstances for disclosure, stating

"In interpreting whether disclosure of a copy

Voy's and Views

Realizable Fantasies continued

of a record in an electronic format is reasonable under surrounding circumstances, we are mindful of the dictionary definitions of the term "reasonable." These definitions consistently indicate that the term ■■■ sonable means moderate, inexpensive, fair, suitable under the circumstances, and not excessive. Thus, if disclosure of a copy of a record in electronic form is consistent with these concepts, the agency would be expected ■ make disclosure in that form.

"Some examples of circumstances in which it would not be reasonable to require compliance with the general rule would include the following situations:

• Significant reprogramming or the creation of new software would be necessary to fulfill the request; and

• The task of redacting [deleting] or segregating exempt [non-public data] from disclosable material would be unduly burdensome."

[This creates a monumental loophole, worse than the one they use in the current law. Namely, agencies can dodge public-access requirements simply by intimately co-mingling public information with non-disclosable information in a single database. This is already common in agency databases designed without thinking that public access was one of their responsibilities.]

■■■■ Kopp Sold Us Out?

Aside from the pro-profiteering, pro-bureaucracy bias of Kopp's task force, there's also the issue of Governor Wilson's Information Technology czar, CIO John Flynn. Before his appointment was ever confirmed by the Senate, he publicly testified (February 7, 1996) that public records were too valuable to not consider selling them at market rates. (For instance, the Department of Motor Vehicles sells our personal data for more than $45 million per year. That *is* why you gave the DMV your personal information...isn't it?)

But after Flynn publicly advocated peddling our public records for profits (they call it "revenue"), ■ only did Kopp vote in favor of his confirmation, he sponsored this data-peddler!

State's CIO Ignores Senate And The Law

Two years ago, Senate Bill 1 required that Flynn's Department of Information Technology develop ■ plan by January 1, 1997, for how agencies would provide public access to their already-computerized public records. Six months overdue (as of June 1!), Flynn has provided zippo.

Kopp chairs the Senate's Select Committee on Information Services in State Government, which should be overseeing this. But our formerly diligent watchdog hasn't raised even a wee-tiny whimper about Flynn's disregard for state law and public access.

Please, Quentin, Show Us It Ain't So

By action, show that you still support free and copying-cost-only public access to public records, even in their modern, useful, valuable, already-computerized form.

Please show us, by action, that you haven't sold us ■■■ to buck-hustling bureaucrats and data profiteers—and limited modern government access to those who can buy it. ■

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Solutions
Business

LAPTOPS • BY ED KAHN

Pen Writing On Your Portable

Handwriter Manta Moves Us Closer To The
Earlier Days Of Pen And Paper

Despite all of the advances in computing, many people still long for the convenience of pen and paper. Typing on a keyboard requires a skill that is an obstacle for many people who feel that they cannot think with the distance a keyboard puts between the brain and the output. Nevertheless, keyboards remain the dominant input device for most laptop users.

Communications Intelligence Corp. hopes to move us closer to the earlier days of pen and paper with Handwriter Manta. The Handwriter consists of a small tablet that weighs about 10 oz., an electronic pen-like device, sophisticated software, and a cable that connects the tablet to the computer through a serial port.

The electronic pen resembles a conventional pen or pencil, but is powered by a couple of tiny batteries that will last for hundreds of hours. Writing on the pad transfers your marks to the computer screen. The pen can also work like a mouse. You move the pen to wherever you like on the screen. This is just like moving the mouse pointer. If you tap the pad with the pen point, it is like clicking the left mouse button. A button on the pen serves in place of the right mouse button. For people who are uncomfortable using a mouse, this is a good alternative.

The package includes a good tutorial and a crossword puzzle program to help you become comfortable with writing on the tablet. While we all know how to write on a tablet of paper, writ-

ing in a way that a computer can understand requires a new set of skills. The Handwriter documentation suggests that the learning curve is easy. They say that a half-hour investment will make you comfortable using the Handwriter Manta. My own experience was that it took longer to become comfortable with the device.

Computers, with all of their power, have a hard time deciphering handwriting. First, they cannot handle cursive writing; they simply cannot tell when one letter ends and another begins. Secondly, even if you print the letters and numbers, the computer has a hard time distinguishing between certain letters and numbers. As a result, the Manta has to teach you how to make the letters so the computer can recognize them.

There are several ways of learning this new system. The tutorial offers a number of exercises that will teach you how to make the letters the software will recognize. A second way of becoming facile with the device is to answer a series of questions that are designed to teach the soft-

ware how to recognize the way you make your letters and numbers. In either case, you and the software must learn to communicate before you can write efficiently on the pad.

The crossword puzzle package that comes with the Handwriter Manta helps you become familiar with entering text through the writing pad, which measures about 7" x 8" with a writing surface of a little larger than 4" x 5." Once you become comfortable with the Manta system, you can begin to work in other programs. With Microsoft Word, you can install an icon on your toolbar that lets you edit and revise Word documents with Handwriter. You can do the same with a number of other programs. In

Laptops *continued from ___ ___*

spreadsheet programs, for instance, you can enter numbers directly into the cells with the electronic pen.

There are other things you can do with this device, like add your signature to letters, but for the most part, I found that the benefits of Handwriter Manta were outweighed by the awkwardness of carrying around another piece of equipment. The advertising suggests that it ■ easier to work on the tablet than on a keyboard when you are on an airplane. I found from personal experience that it is virtually impossible

to use this device on a plane unless you are in first class. There is simply not enough room to set up your computer and put the Manta anywhere except inside your shirt.

As I worked with the Handwriter, I kept reminding myself that because I actually like keyboards I should be careful to not be too harsh on this system. In the end I had to admit that there is a real need for Handwriter Manta for people who have wrist problems. If you suffer from tendonitis or other repetitive stress injuries, this product could be a real godsend.

I see this ■ a specialized product that fills a need and does it well, but I do not see this as something that belongs on every desk. Keyboards are simply too efficient to be supplemented by this pad unless you have special needs.

The Handwriter Manta works with either Windows 3.1 or Windows 95. With Windows 95 it requires ■ least 20MB of hard drive space and at least 8MB of RAM. The software comes on three floppy disks, alleviating the need for a CD-ROM drive just to get the system up and running. The product comes with a one year warranty.

> There is **a** real need for Handwriter Manta for people who have wrist problems. If you suffer from tendonitis or other repetitive stress injuries, this product could be **a** real godsend.

Computer Of The Month

Digital Equipment's HiNote VP 500

Digital Equipment

Corp., once one of the top companies in the computer world, was slow to enter the laptop field. Earlier, after introducing several spectacular models, they decided to exit the market. Now they ■ back with another winner with one of the most powerful notebooks available today.

The HiNote 500 series is available in three configurations with prices ranging from $2,499 up to $4,499 for the top-of-the-line model 575. All three models come standard with 16MB of RAM, expandable up to 80MB, and have a 12.1" display. The HiNote VP 575 is powered by ■ Pentium 166MHz chip with MMX technology.

Digital incorporated innovative design features into the HiNote series. For example, the expansion bay on the side of the computer has a drive module that includes both 1.44MB floppy and 12X CD-ROM drives. Most of the competing notebooks require you to choose between these two drives. Digital's approach lets you always have both drives available. In these days of software increasingly coming on CD-ROMs, it is an added convenience to have both drives available all the time.

The module that holds the drives is easily

replaced with a second battery pack ($279). With improved circuitry and battery technology, by using two batteries it is possible to power a notebook for up ■ ten hours. In the most expensive HiNote notebook, Digital uses a Lithium Ion battery rather than the Nickel Metal Hydride battery found in the lower-end models. Lithium Ion technology provides more power for the weight and does not suffer from memory effect. Memory effect reduces the duration of a battery's charge if you consistently recharge when the battery is not fully depleted. In other words, if you run the battery for an hour and then recharge, over time the battery will remember that ■ only has to run for an hour. While the condition can be reversed, it is an annoyance.

Hard drive configurations range from a 1.44GB all the way up to a huge 2.16GB drive.

Like much of the rest of this computer, these drives are removable and can be replaced if they fail or with larger drives if needed.

Digital has made it easy to attach an external monitor and gives you the option of viewing the built-in display, the external monitor, or both. Since many people attach an assortment of peripherals ■ their notebook at their primary work location, Digital designed the HiNote so that everything will continue running even after you close the top. But in normal mode, with the top closed, the computer goes into ■ suspend mode, letting you stop in the middle of ■ application and return to where you left off simply by opening the top.

The keyboard is well-designed and easy to use. There is a TouchPad in lieu of a mouse. If you prefer a mouse, you will need to connect it through the serial port. There is a PS/2 port that could be used by the mouse, but you will probably want to reserve that for an external keyboard.

The HiNote has two PC Card slots that let

> *The HiNote 500 series is available in three configurations with prices ranging from $2,499 up to $4,499 for the top-of-the-line model 575.*

Laptops *continued*

you ▪ either a single Type III card or up to two Type I or II cards. Once again, Digital has used the newest and most powerful technology for these slots. They utilize the new CardBus standard that lets information flow much more rapidly than the older standard. In addition, the slots are set up for Zoomed video, which lets you see full motion video if you use a Zoomed video card.

As with most new notebooks, high-speed infrared transfer of files is accommodated

through the serial infrared sender and receiver on the back of the computer. Most new notebooks have only one serial port, but with the PC Card slots and the infrared reader, there is no need for more.

The computer is rounded out with full multimedia support. Speakers ▪ located above the keyboard for either monaural or stereo sound. In addition, there are ports on the side for microphone, line-in and line-out. The system is Sound Blaster-compatible.

The HiNote comes standard with Windows 95, but for an extra $200 you can upgrade to Windows NT 4.0. There is a full instruction manual available on the hard drive as well as in print. I was not able ▪ navigate through the electronic users guide with the included Adobe Acrobat reader. Digital offers ▪ one-year warranty. The HiNote series of notebook computers is definitely worth a look when you are ready to buy your next computer ▪

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With improved circuitry and battery technology, by using two batteries it is possible to power ▪ notebook for up to ten hours.

RESOURCES:

HiNote VP 500, $2,499 and up
Digital Equipment Corp
100 Nagog Park
Acton, MA 01720
1-800-722-9332

NETWORKING • BY PETER JOHN HARRISON

Online At 56Kbps

The New Modem Technology

Whether you are

a Net surfer looking for a faster way to get online, or a LAN manager looking to provide users with dial-up access, the new "56K" modem technologies have probably caught your eye. Promising a higher speed over standard analog phone lines, they sound like an attractive alternative to ISDN. The question is, do they really perform as advertised? Can an analog modem compete with ISDN? It is a question worth asking, but to really understand the pros and cons of this new technology, you need to understand a little about how it works.

Traditional Modem Basics

Traditional modems were invented long before the "digital revolution" hit the telephone industry. As a result, modems were designed to transmit data over a system that used analog technology to transmit sound. Early modems, called *acoustic couplers*, worked by placing a telephone handset into a cradle containing a speaker and microphone. Once the handsets were each end of the connection were in their cradles, the acoustic couplers at each end of the connection would convert it to a very precisely *modulated* audio signal, then *demodulated* the signal at the other end, converting it back into binary data. The word *modem* comes from the first few letters of the terms *MOdulate* and *DEModulate*.

Traditional modems have come a long way since the days of the acoustic coupler. Modems of the 1960s transmitted data at speeds of 110 bps, but today's modems can send data at up to 33.6Kbps, more than 300 times as fast. Even so, their basic principle of operation remains the same. Modems still convert digital information

into a precisely modulated analog signal, and that introduces some very specific limitations on how fast a modem can send data.

It's All Shannon's Fault

The problem is that at 33.6Kbps, traditional modem technology has all but reached the theoretical maximum transmission speed defined by Shannon's Law. Shannon's Law is an equation that proves that, given the way our modern telephone system works, the best data rate you can get out of a static and loss-free analog-to-analog modem connection is about 35Kbps.

Based on Shannon's Law, you would assume that today's new 33.6Kbps are about as good as modems that work with standard phone lines are ever going to get, and you would be right—except that the modern telephone system is not really an analog system anymore.

Today's telephone network is mostly digital, so instead of transmitting analog signals from one location to the next, the telephone system converts the analog signals generated by our telephones and modems into tiny "sound bytes," called *samples*, each 1/8000th of a second long. Then each sample is assigned a numeric value representing the electrical poten-

tial of the analog signal at the time the sample was taken. After being sent to the central office serving the phone line being called, the sample information is used to generate similar electrical potentials at the other end of the connection. These short bursts of voltage, when taken together, create a close facsimile of the original analog signal.

Sampling At 56K

If an analog modem could control the value of each sample it sent, it could achieve data rates of 64Kbps. What Shannon's Law shows, however, is because analog modems have no way of knowing when each sample begins or ends, modems cannot achieve that level of control. An ISDN digital device, on the other hand, can assign exact values to each sample, and ask the phone system to pass the specific corresponding sample voltage for that value to an analog device connected to a standard telephone line.

That is how the new breeds of 56Kbps "modems" work—by using an ISDN digital device as the "central site" to set exact values for each sample. Since each sample can have up to 256 values, or eight bits of data, the theoretical "top speed" for this technology would allow for

> Modems still convert digital information into a
> precisely modulated analog signal,
> and that introduces some very specific limitations
> on how fast a modem can send data.

Business Solutions

Networking *continued*

line speeds of up to 64Kbps (8000 samples per second times eight bits per sample). In practice, however, other limitations of the phone system reduce the number of usable values by half, to 128 values, or seven bits of data per sample. Multiply these two numbers—8000 samples per second by seven bits per sample—and you get the magic 56,000 bits per second

This is a radically different way of using ▮ telephone line to send data. So radical, in ▮▮▮, that the old moniker "modem" no longer really applies. Instead of "modulating" the signal sent from the ISDN-capable central ▮▮▮, the central site actually *encodes* it. So 56K "modems" no longer actually "modulate" and "demodulate" their signals, but "modulate" and "decode."

The Fine Print

The new 56K modem technology ▮ fast when it works, but there are many limitations to this new technology. These limitations can force 56K modems to transfer data at speeds well below 56Kbps, or even force them to abandon 56K operation altogether and run ▮ standard analog modem mode.

The first of these limitations is that the "central site" location you are dialing in to has to have ▮ ISDN line and equipment designed to work with the type of 56K mode▮ technology you are using. With two different 56K mode▮ philosophies out there, ▮any Internet Service Provide▮ and telecommuting managers are waiting for one definitive standard to emerge before investing money on ne▮ equipment. That means you are far from guaranteed that the ISP you dial into will support 56Kbps connections with your modem. (Do not worry that you will not be able to make a connection, though. If a location you are dialing in to does not support 56K connections, your modem will just "fall back" and work like a standard 33.6 or 28.8Kbps analog modem.)

Another limitation ▮ that 56K modems can only send data ▮▮ 33.6Kbps or less. Like any other analog device, 56K modems still ▮▮▮ not establish the timing of the phone company's outbound samples. So, like any other analog modem, they are subject to the limitations of Shannon's Law.

The condition of your local telephone line is also a limiting factor 56K modem technology requires a high level of precision in the voltage and timing of each sample. That means that the physical phone line used to connect a 56K modem ▮▮ the central office cannot have special amplifiers to extend the reach ▮▮ the phone line. These devices distort the integrity of the samples and force 56K modems to *fall back* and operate like a standard 33.6Kbps analog modem. So if your phone line is in a rural location, ▮▮ even just on the outskirts of town, you may be out of luck where 56K modem connections are concerned

Your phone service needs to be from a phone company's central office that is capable of managing the very precise signaling requirements of 56K. While this is not a concern for most phone company customers, not all central office locations can handle it.

Hotel and office PBX systems can also be a problem. PBX systems, which allow several telephone users at a single location to share a more limited number of telephone lines, often receive, sample, and re-transmit the centr▮▮ office signal to their local users. This destroys the integrity of the individual samples, and, once again, forces 56K modems to fall back to standard analog modem operation. (On the

Networking *continued...*

positive side, though, PBX systems that use ISDN lines instead of analog to connect them to the telephone company do not suffer from this limitation.)

Even on phone lines with none of these problems, there are still line conditions that can slow down a 56K modem. The most bedeviling of these is static electricity. Static comes from radio signals and other sources of electromagnetic interference that pass through your tele-

phone line. Static causes subtle changes in the signal on the line, altering the precisely calibrated voltages of each sample. These distortions force 56K modems to use an even more limited number of the 256 voltage levels available to each sample. The result is that the modem falls back to a lower transmission rate that, while still faster than standard modem data rates, are appreciably less than 56Kbps. The 56K modem users I have spoken to tend to
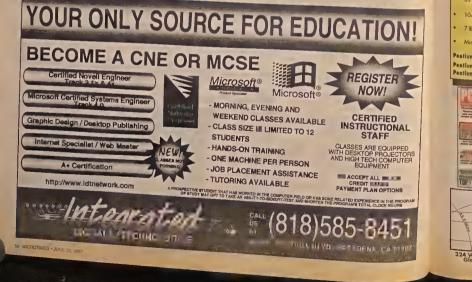
get connections that operate in the 42.6 to 48Kbps range, 15–25% slower than the advertised 56Kbps.

Lastly, even when everything else is working fine, FCC regulations restrict 56K modem technology to a top speed of 52Kbps. The FCC imposed these restrictions because of concerns that using the full 56K speed might overload the telephone system. If and when the FCC becomes convinced that this is no longer a concern, they will allow 56K modems to fly at full speed. Until then, though, FCC regulations will throttle 56K modem technology back to protect the integrity of the rest of the voice calls on the telephone network.

> Shannon's law is an equation that proves that, given the way our modern telephone system works, the best data rate you can get out of a static and loss-free analog-to-analog modem connection is about 35Kbps.

But Does Buying 56K Make Sense?

The upshot of all this is that 56K modem technology can provide substantial improvements in speed over conventional modem technology

Networking *continued from page 56*

for some users, but not every user in every location. My take on this technology is that if you live in ■ metropolitan area and ■■ you want ■ faster Internet access, 56K modem technology may be a good investment. Just be sure ■■ check with your ISP and see if and which 56K modem technology they support before buying.

If, on the other hand, you are looking to 56K technology as a solution for remote LAN access, I think that 56K's spotty performance makes it a risky technology to invest in, particularly when there ■ another, standards-driven and proven

technology that provides even better performance than 56K—ISDN. With ISDN adapter prices costing as little as $200, it just makes sense to invest in ISDN, particularly when you have to install ISDN at your central site ■■ use 56K technology anyway. So my advice ■ to either skip 56K modem technology entirely, ■■ to buy into a central ■■■ solution that supports standard analog modem, 56K and ISDN connections. That way you ■■■ provide true high-speed ISDN access to your power users who

have ■ separate phone line for their computer and home office, while still providing the fastest modem technology available to people with just one phone line for their household ■

RESOURCES:

Rockwell International's KS6Flex Technology page:
URL: http://www.rockwell.com/rss56K.html

U.S. Robotics' x2 Technology page:
URL: http://x2.usr.com/index.html

The U.S. Robotics' x2 Line Test page
(confirms whether your phone line will work with x2 or any other 56K modem technology)
URL: http://x2.usr.com/linetest1.html

> If your phone line is in a rural location, or even just on the outskirts of town, you may be out of luck where 56K modem connections are concerned.

CNE & MCSE AT NIGHT

If you aspire to be a Certified Novell Engineer (CNE) or a Microsoft Certified Systems Engineer (MCSE), but have trouble getting time off during the day, Evernet Education Services has the program for you. Evernet is now offering CNE & MCSE courses in the evening!

Our scheduled courses will be conducted in our state-of-the-art classrooms with certified instructors to ensure you gain all the knowledge required to pass the certification tests. And, the best part is you can take the courses in non-business hours and not upset your boss.

Night classes will be starting soon in the Los Angeles area, so call us today for a free class schedule and more information on how you can get your CNE or MCSE Certificate. Seating is very limited and will be guaranteed on a first-serve basis.

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TELECOMMUTING • BY ROBERT MOSKOWITZ

Issues Of Security And Safety For Telecommuters

"Home Visits" Take On A New Meaning In An Era Of Telecommuting

An interesting trend among employers of telecommuters is the "home visit." Until recently, employers were concerned about what a telecommuter's home office might look like, but had no established model of procedures or parameters regarding how or when to check them out.

Today, more and more employers are recognizing they have a tremendous investment in their telecommuters' home offices, not only from the standpoint of the equipment the employer might own in those remote locations, but also in terms of safety and security issues there.

For example, if you're telecommuting to work from your home office and you trip over an extension cord, burn yourself with hot coffee, or come down with severe Carpal Tunnel Syndrome, there's every likelihood of a legal responsibility on the part of your employer. To my knowledge, none of this has been tested in ▬▬ yet. But who could expect to prevail with an argument that an employer has no interest in the safety and security issues of employees working ▬ home?

That's some of the background behind the changes now taking place in the world of telecommuting. It helps explain why several relatively large-scale employers ▬▬ now directing their supervisors who have telecommuters on their teams to make plans to visit their telecommuters' off-site workplaces.

More and more employers are encouraging these site visits when their employees first begin to work from a remote site, usually as one small part of the approval process. An increasing number of employers are also asking for repeat visits to their telecommuters' homes at regular intervals, perhaps every year, every six months, or even every quarter—depending on the specifics of the situation and the nature of the work he or she is doing.

Because of the well-recognized and entirely legitimate concerns about privacy, visiting a telecommuter's home and inspecting his or her workplace is usually a lot more sensitive ▬ issue than inspecting a workplace ▬ ▬ public telecommuting center. That's why employers generally seem to be bending over backwards to make sure they don't upset anyone or violate any employees' rights, while at the same time trying to make sure they are protecting their own interests by verifying the safety and security of their telecommuters' home-based workplaces.

Home Visit Guidelines

Currently accepted guidelines for site visits to telecommuter's home offices usually include some or all of the following items.

1. Supervisors should schedule the site visit with each telecommuter at a time of his or her convenience. For simplicity, the best time might be when other family members are away from the home. Don't force a visit when it's not wanted, but make clear that a visit must take place if telecommuting is to be allowed to continue.

2. Have a written checklist of items to be inspected, and limit your inspection to the telecommuter's workplace, and specifically to these items. This checklist will usually include:

a. Verify there is adequate electrical power and power outlets, work space, and access pathways.

b. Verify there is ergonomic lighting, seating, work-surfaces, and other work-related resources.

c. Verify power cords, work-related tools, filing equipment, office equipment, and items stored in overhead shelves or bins ▬ safely arranged and secured.

d. Verify there are reasonable safeguards in place to prevent family members from getting hurt within the telecommuter's workspace.

e. Verify there are reasonable safeguards in place against loss or theft of the employer's proprietary data and equipment.

f. Verify there are reasonable safeguards in place to protect the confidentiality of matters related to the telecommuter's work.

> Today, more and more employers are recognizing they have a **tremendous investment** in their telecommuters' home offices, not only from the standpoint of **the equipment the employer might own** in those remote locations, but also in terms of safety and security issues there.

Telecommuting *continued*

3. Establish the degree of compliance with the employer's work rules for telecommuters regarding taking home, storing, and using information, equipment, and other resources from the employer. For example: Does the telecommuter comply with the employer's rules regarding storage of company data on a privately owned computer?

4. Make a detailed inventory of employer-owned equipment and other resources being used at the telecommuter's workplace. Verify the presence or absence of dedicated telephone lines, fax equipment, telephone routing equipment, and other products and services paid for by the employer for the telecommuter's use.

5. Both the supervisor and the telecommuter should sign and date a site-visit form indicating that both parties were satisfied with the conduct of the site visit. Also, both parties should sign the complete inventory list to indicate they accept it as accurate.

The most ticklish part of conducting a site visit ■ the telecommuter's home ■ that it can compromise the atmosphere of "trust" that has previously been established between the telecommuter and his or her supervisor. To help prevent any compromise of this all-important trust, the supervisor should take pains to make clear that:

a) All telecommuters are being visited, not just a few who have been singled out for suspicion or verification.

b) No problems or danger signs have prompted the request for this site visit. The visit is a normal (although perhaps a brand-new) part of the employer's well-established and long-standing policy ■ telecommuting. It is merely one more aspect of the employer's overall efforts to help the telecommuter maintain ■ safe, secure workplace.

c) These visits are intended more to provide opportunities to improve the telecommuters'

home workplaces, rather than an attempt to find fault with them or shut them down.

Two New ■■■ Interesting Phone Products

One of the biggest drawbacks to working as a telecommuter has always been the lack of "professional" telephone systems. It's bad enough to miss a call from an important client or customer. How much worse would it be if your 3-year-old daughter answers an important call, makes ■ few unintelligible noises in the caller's ear, and then leaves the phone off the hook without telling you?

So it's always exciting when new products come along to make the process of staying in touch with others a lot easier and more professional for people working as telecommuters in remote offices or at home.

Here are two I think will particularly interest you.

Business Solutions

Telecommuting *continued from page 64*

The SoloCall "Smart" System

This is actually a line of products from SoloPoint that handle your incoming calls just like they would be handled in your company's main office.

The SmartScreen is the simplest of the devices. It's designed to make more sophisticated use of telephone lines on which you've installed the phone company's messaging service, aka "voice mail." You simply plug the SmartScreen into the line between your telephone and the wall jack. From then on, whenever a call comes in, SmartScreen lets you listen to the caller without picking up the phone. If you wish, you can immediately connect to the caller from any telephone on that line, even if he or she is in the middle of leaving a voice mail message. Finally, SmartScreen continually monitors your line and flashes a warning when you have voice mail messages waiting. So when you return from an absence you no longer have to pick up the phone and listen for the stuttering dial tone to find out if someone has left a message while you were out.

The SmartMonitor goes a step further and provides a very sophisticated form of call forwarding. Utilizing multiple telephone lines, the SmartMonitor effectively links your office phone to your cellular phone. With SmartMonitor in operation, whenever someone calls your office number, your cellular phone rings simultaneously. When you answer, you're connected to your own line as an "off-site extension." It's then your choice whether you'll listen in without being heard or "answer" the call as if you were picking up a phone in your office. You can even listen privately as the other party leaves a message on your answering system.

The SmartCenter is the most sophisticated element in this product line. Functioning as an automated switchboard, the SmartCenter lets your caller choose whether to leave a message, send a fax, page you, or connect to your cellular phone. This makes it easy to give people a single telephone number, and feel confident they can reach you no matter where you happen to go.

If you're part of a larger organization, the SmartCenter is extra useful because it provides a menu capability you can preset to let callers route themselves to other telephone lines for special handling of their specific needs, such as talking to a bookkeeper or an account manager. SmartCenter can also treat incoming calls differently on the basis of their Caller ID numbers, distinctive ringing, or the individual PIN numbers you can give to people who call you frequently. Calls from individuals or groups of people can then be selectively routed to an answering machine, or to a different phone number where you—or a person covering for you—can answer.

In addition, you can program the SmartCenter to change how it handles incoming calls, depending on the time of day and day of the week. For example, you can set it up to forward important calls to your cellular number during the days you're telecommuting, but forward them to your regular office during the days you're working there, and to an answering machine on weekends.

American Network Systems' "Total E-Call"

This is an extremely powerful hardware/software combination that turns your desktop PC into a sophisticated voice, pager, and email

Telecommuting *continued*

message management center. Once you've installed the adapter card, specified your email accounts and phone numbers, and plugged your telephone line and telephone into ■ (only a single line at present, but a bigger brother of the device will soon be available to handle multiple lines), Total E-Call gives you impressive powers ■ stay in touch with your co-workers, clients and customers.

Total E-Call is far too complex and sophisticated to explain thoroughly in this space, but here ■ some of the more interesting capabilities it gives you. Total E-Call can

1. Answer your phone like a normal answering machine, recording messages digitally on your hard disk to the limit of your available space, and giving callers a menu of choices for recording a message and forwarding it to you, ■ based on their Caller ID number. You can call in anytime from any telephone to retrieve and forward your messages, even using a pre-set security code if you wish to prevent unauthorized message retrieval.

2. Originate calls to any number of people in your Total E-Call database, play each one a recorded message of your choice, offer ■ chance to respond by pressing any one of the ten keys on the telephone number pad, and keep track of which key each one of them presses.

3. Record new voice mail directly through your telephone and send it to any combination of the people in your Total E-Call database, either through conventional voice mail (effectively extending your voice mail system to everyone with a telephone) or through email with a "voice message" attached. Note: The recipient need not have Total E-Call installed to hear the voice message you've attached to your email.

4. Use Caller ID information to identify a caller before you answer the telephone, and either a) respond with a message you previously recorded for that person alone, or for a group of people of which that person is a member, or b) pop up ■ the screen that person's detailed contact records, including notes on previous conversations you've been keeping within your Total E-Call database.

5. Receive a phone call, ask for a message, and forward that message to you at your then-current phone number, pager number, or email address (with the voice message attached), again with or without using ■ security code.

6. Respond to emails and voice messages from around the world through your telephone, recording your messages separately, then have each response sent to the intended recipients at specific times of the business day in their different time zones.

7. Keep automatic logs of the phone calls you make and receive, including manually or automatically recording any or all of what's said during these telephone conversations.

8. Do any of this on a date-and-time schedule you've preset. ■

RESOURCES:

SoloCall "Smart" System
SoloPoint, Inc.
130-B Knowles Dr
Los Gatos, CA 95030
(408)364-8850
URL: http://www.solopoint.com

Total E-Call
American Network Systems
(805)579-8898

UNIX • BY BENNETT FALK

Where Scalability Comes From

UNIX And Enterprise Computing

Toward the end of the

month of May, Microsoft hosted something called "Scalability Day," a hefty marketing event aimed ▄ convincing the people that run businesses that their businesses could be run on Windows NT, no matter how big the business in question might be.

Now a couple of observations ▄ worth making about "Scalability Day." First, it's an event aimed at expanding NT's market share ▄ the expense of UNIX. Microsoft is very eager to portray Windows NT Server ▄ ▄ cost-effective alternative to UNIX.

The second observation is that "scalability" is a very slippery word and that it should be treated with ▄▄▄. It ▄ ▄ word that exists in the weird twilight zone where marketing and engineering overlap.

Marketing and engineering each have their own kind of gravity that pulls scalability this way and that. Marketing would really like for scalability to be something very general, along the lines of "No matter how big your business is, you can run it on Windows NT." Ultimately, marketing wants to make scalability a verb, to say of one's own product (whatever it happens to be) "It scales!" and to say of the competition "It doesn't scale." In this view scalability is a quality that things either have or lack.

Engineering, on the other hand, would like scalability to be something specific like a number—the number of transactions a given system can process in a second, or the increase in system capacity that will be gained by adding another processor. In this view scalability is something quantitative, a matter of degree.

Perennial divisions such as those between marketing and engineering or between quality

and quantity will not be solved here. The best we can do is to shed some light ▄ what our choices are and why we have to worry about things like scalability in the first place.

The Disappearance ▄ UNIX

On this latter question, I blame the disappearance of UNIX.

For most of this decade, UNIX has been disappearing. Not "going away," you understand, but becoming invisible.

Not all that long ago, the principal beneficiaries of UNIX were the people who used it interactively. The usable part of UNIX is a collection of simple tools that ▄▄▄ be combined in new and interesting

> **"Scalability"** is a very slippery word that should be treated with care. It exists in the weird **twilight zone** where marketing and engineering overlap.

ways to meet the challenges of the moment.

The UNIX toolkit approach ▄ life-enriching for some people and torture for others. When the Macintosh and the various editions of Windows introduced visually interesting, easy-to-use systems with standardized solutions for, say, 75% of the things a computer user might need to do, personal computers "took over" the desktop. The computers that most people actually use are now personal computers.

But the computers that people interact with are not the only computers in the environment. UNIX, as it has been displaced on the desktop, has moved to the data center.

The computers in a corporate data center are typically servers that don't expect to be used

interactively by actual human beings. Instead, they host one or more applications (such as a Web server or a database management system). Between the human user and the application hosted on a server computer, there are client programs (Web browsers are ▄ good example) that run ▄ desktop computers. The client software manages all the user's interactions with the server part of the application. The real user of the server machine ▄ not the human at all, but software clients.

Enterprise Servers

The UNIX industry's commitment to this "Enterprise Server" class of machine is indicated by a series of announcements that have appeared over the last few weeks from various UNIX vendors.

Hewlett Packard introduced the HP 9000 V-Class Enterprise Server. The V-Class servers are powered by 64-bit processors running at 200MHz and the V-class SMP (symmetric multiprocessor) architecture will support up to 32 processors. The V-class also features a high-performance backplane that shuttles data back and forth between the processors and memory at an alarming speed. The base price for a V-class machine is $170,000, and of course, the V-class computers run UNIX (HP-UX 11.00).

Sun began shipping its "Starfire" (or Ultra Enterprise 10000) line of servers in May. The Enterprise 10000 uses the 250MHz UltraSPARC processor and can accommodate up to 64 of them. Memory configurations range from 2GB to 64GB. The Starfire series runs Solaris, Sun's UNIX implementation.

And on May 18, IBM's Deep Blue defeated chess champion Garry Kasparov in a six-game chess match. Deep Blue is based ▄▄▄ the RS/6000

EarthLink wins the prize for price, performance and support when it comes to business Internet services.

Suneel Ratan is the managing editor of Channel One On-Line. Channel One reaches 40% of America's teenagers through TV programming in 12,000 schools. But now Channel One On-Line has given those millions of teens a way to reach back.

"We first went on-line with EarthLink when we needed connectivity between our New York and Los Angeles offices. Now we have 130 corporate mailboxes—and we recently moved our Website to EarthLink as well.

"The reason EarthLink won the prize is that they gave us the best package of price and performance and they have a totally dependable support infrastructure. In fact, what impressed us the most is that EarthLink is more responsive than anyone else.

"Internet technology is still bulky and somewhat immature. With over 100,000 teenage and teacher hits on our Website each day, we need a service provider that can handle the traffic. That's the crucial variable. And that's why we chose EarthLink.

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SP, another multiprocessor computer. For the chess match, Deep Blue was configured with a total of 32 processors: two "wide nodes" running 135MHz processors supported by 1GB of memory and thirty "thin" nodes running 120MHz processors with 256MB of memory. Deep Blue runs IBM's UNIX implementation, AIX.

These are very powerful computers, and they cost a lot of money. Companies don't buy them for fun; they buy them because they can justify the expense.

Justifying the expense usually comes down to two things: performance and scalability. Establishing a computer's performance is a matter of figuring out how much work the computer can do and what it will cost to do that work.

Scalability, on the other hand, is a matter of figuring out the productive lifetime of the computer—how long it will be before the company's workload overwhelms the computer's capacity and a new computer must be purchased. If the computer's capacity can be expanded (as is the case with the all multi-processor computers mentioned above), how much additional capacity can be gained by adding processors?

Scalability And Enterprise Computing

In a sense, scalability depends on performance, and both performance and scalability depend on how the computer's work is measured.

In the old days, the unit of work was the interactive user; UNIX performance was a matter of how many interactive users could work with a machine simultaneously.

The trouble with this measure of performance is that the "interactive user" is a very difficult unit of work to standardize; some are reading news and cruising the Web, some are sleeping, some are nroffing their dissertations, some are compiling C programs, and some are hunting for eight-letter palindromes in /usr/dict/words. It's hard to arrive at a meaningful price/performance ratio when the unit of performance is so difficult to manage. Fortunately, UNIX disappeared from the desktop before all the UNIX vendors exhausted themselves in the attempt.

The trend toward "user-less" servers called for a new way of measuring performance. For server-class machines and the applications that run on them, the preferred unit of work is the "transaction." Transactions, like debiting or crediting an account, are an application-based (as opposed to "user-based") unit of work.

Unfortunately, transactions are almost as variable a unit of work as interactive users, and anyone who states a performance claim in transactions-per-second should be prepared to explain in the same breath just what they mean by "transaction.".

While transactions can be quite variable, however, they lend themselves more readily to standardization than interactive users do. Consequently there are organizations like the Transaction Processing Council (TPC) that have

Business Solutions

worked hard ■ standardizing transaction-based performance measurements. At its Web site the TPC maintains ■ spreadsheet of the certified results reported for the various transactional benchmarks it maintains

But once we've measured performance in transactions per minute, what else must be done to arrive at scalability?

An announcement from Sun (also in May) illustrates the relationship between performance and scalability. Sun announced benchmark results for ■ suite of tests developed by Oracle. The Oracle tests measure a computer's ability to complete business processes simulating the work done in finance and manufacturing. The business processes are constructed out of fifty-seven different kinds of transactions that occur ■ finance and manufacturing applications.

The tests were run on an Ultra Enterprise 6000 computer configured for eight CPUs. With ■ load of 1100 client programs, the Ultra Enterprise 6000 could complete 190 transac-

tions per minute. When configured with 24 CPUs the Ultra Enterprise 6000 could support 3000 users and achieved ■ throughput of 500 transactions per minute

The point of this exercise is that performance alone isn't an indicator of scalability. The first scenario (1100 clients running against an 8-CPU machine) established the capacity of the baseline configuration. The second scenario showed that tripling the number of processors very nearly tripled the amount of work the system could do.

To arrive at some idea of how scalable ■ computer (or an application or ■ operating system) might be, performance must be measured repeatedly under conditions that are well understood and allowed to vary only ■ controlled ways.

Ultimately, scalability ■ about limits. We ■■■ to measure scalability to determine the capacity of ■ computer or an application to do work, and this capacity will not be infinite. Inexorably the law of diminishing returns kicks in, and the 20th, or the 32nd, or the 64th processor that is added to ■

computer will contribute less additional capacity than the second or third or fourth processor

And for anyone who believes that scalability is about running any business, ■■■ matter how big on an operating system, it might be helpful to remember that there was a time when businesses of every size could be run on no computer at all ■ *Copyright © 1997 by Bennett Falk. All rights reserved.*

RESOURCES:

Hewlett Packard
URL: http://www.hp.com/go/9000servers

IBM
URL: http://www.rs6000.ibm ■■■

Sun
URL: http://www.sun.com/servers/ultra_enterprise

Transaction Processing Council
URL: http://www.tpc.org

SMALL OFFICE/HOME OFFICE • BY BIRRELL WALSH

Internet Research

How To Find It, Analyze It, And Write It Up Professionally

Research is power. As

more and more information accumulates on the Web, moving around the Net with agility means that you can find things other people can't. Those people will gladly pay you to do so, because so many are still intimidated by the Web.

This month we look at four tools to facilitate research on the Internet. Two are new, and two are old friends that have come out in new editions.

NetResearch

Some of us just dive right in and start looking for something. That's fine; it is certainly my style. But we who jump in find that those who prepare themselves soon catch up and pass us, because they have surveyed the field first.

One very fine overview for online researchers is a book by Daniel J. Barrett called *NetResearch: Finding Information Online*. It is an O'Reilly book, and that is always a good sign; O'Reilly books have less fluff in them than most computer publications.

Most tomes in the research field would have long lists of Uniform Resource Locators (URLs) that you suspect the author has cut and pasted from someplace online. Since Web sites appear and vanish like spundrift, these books are out-

of-date when they hit the street and grow more obsolete by the week.

Barrett's book is different—he offers a meta-view. He writes about how to approach online research itself, rather than just about how to find specific information. His goal is not to produce a good researcher. As such he tries to train your investigatorial intuition. I know Barrett's techniques work because I've happened on a few of them myself over the years, but I've never seen them all in print before.

Instead of telling you to try this or that site, he tells you how a shrewd researcher can guess where good sites might be hidden. He has a useful brief section on guessing the probable URL for a given company or academic institution. He gives very effective tips that will save the beginner hours in investigating a topic; one is to find and read FAQ files, the compendia of Frequently Asked Questions that are put on the Net by experts and knowledgeable amateurs. When Barrett does give lists, they are particularly useful. One is of Internet country domains. You probably knew that Switzerland is *ch* (for Confederation Helvetica) but did you know that Antarctica is *aq*?

Barrett has recruited some skillful collaborators. These are men and women who have used the features he is talking about, and whose

adventures with them are summarized in the book. Instead of just one viewpoint, you get to hear from users of different temperament and experience. Barrett devotes a whole chapter to finding people through the Internet. One of his contributors tells of catching up with a colleague who was at a conference in Scotland by hopscotching around the Web until she found a way to reach him.

There are two obvious markets for this book. One is the beginning investigator who wants an overview of the Web as a research tool, and a definition of terms. The second market is the seasoned Web walker. The difference between an adequate online researcher and an inspired one is that the genius can always think of one more approach to the problem. Barrett helps you find that one additional way.

WebCompass

At this point you might be saying to yourself, "Why doesn't somebody design a program that will do all this work for me?"

Well, someone did, and Quarterdeck has published it.

At the beginning of the year, I predicted that 1997 would be the year of intelligent agents. WebCompass is one of them. It is a program that will go online and do a brute-force search for your topic. It will go everywhere that you can think of and come back with all known instances of your search terms. There are thirty-five search engines that WebCompass will invoke in pursuit of your topic, if you wish. It does the kind of thorough perusal of online resources that you know you should do but do not have the patience for.

> In NetResearch, Daniel Barrett writes about how to approach online research itself, rather than just about how to find specific information. His goal is not to produce good research. **His purpose is to produce a good researcher.**

Business Solutions

Small Office/Home Office *continued*

When you first invoke WebCompass, you are offered a tutorial which is worth taking. It shows you how to get around in WebCompass, and how to configure it for your own uses. But WebCompass will reward even the beginning user, because its resident wizard will guide you through ▪ elementary search.

You begin searches by naming ▪ topic. The name becomes the first search term that WebCompass will pursue through the Internet. You can add as many other query terms as you want. Then you set the agent loose. It sends the search terms off to various search engines: Alta Vista, Lycos, HotBot, InfoSeek and many others are consulted.

When WebCompass has gotten as many hits as it can from the various search engines, it first eliminates duplicates from the catalogue. Then it sends for copies of the Web pages ▪ still has on its list and makes summaries of them. I am not sure what artificial intelligence program it uses to make those summaries, but it seems more sensible than that in (for example) Microsoft Word's summary-maker. Finally, this edited summation ▪ presented to you.

You are invited to look at the list and delete those pages that are obviously not relevant to what you are doing. You can also summon the pages that seem possibly pertinent. WebCompass looks over your shoulder as you do both the deletions and the summonings. It is refining its internal idea of what you want, because it ▪ not yet done. It will go out and look for more pages on this same topic in the future. As often as you wish it to do so (daily, weekly—you choose) It will not again retrieve the pages you have rejected by deletion. It will look for new Web pages on the topic, and for revisions of old pages that you that you seemed to like on its earlier searches.

It can also look for Usenet articles, ftp files, and gopher sites. With a little presetting, you can get the program to search most of the available Internet for any topic of interest to you.

My research deals with a wide variety of unrelated topics. I need to find people of whom I have never heard before. I need to find unusual organizations, or peculiar documents. I could laboriously construct a search strategy for each of these tasks, or I could unleash WebCompass. WebCompass has reduced my initial search time by a factor of ten. The program orders its results by its best guess of relevance. People I need to find not only appear on WebCompass's results list, but they appear at the top.

The price? $50. Nope, that is not ▪ misprint. Half a C-note will buy this. Amazing. How do they make money giving such products away?

If you have almost no patience with research, but you must do it anyway, WebCompass is your tool.

NUD*IST

Several months ago, research maven Tim Lavalli and I wrote an article (See RESOURCES for a pointer to the online edition of that review) about software tools for a special sort of inquiry. Called "Qualitative" research, it concentrates on meaning and nuance rather than numbers. It has many varieties, but most of them involve working with texts. The researcher reads the text and finds what seem to be themes. The motifs are gathered together into groups or categories. A sort of hierarchy evolves as the researcher returns again and again to the text to find new shadings of meaning and to ask new questions. "Qualitative" research is favored by those who dislike a merely numeri-

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Win 95 Pad	
PS/2 Pad	
PS/2 Slim	
Natural ...	
...	17
... Pad	
...	
...	
... win 95	

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YAMAHA M15 10W	
YAMAHA S15W...	

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- ... Blaster 32PnP ... Card
- 33600 Int'l Fax ... with Voice
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- ... Tower Case (AFX PT)
- 104 Key Enhanced Keyboard ... ... Mouse
- Microsoft ... Bundle
- Microsoft Windows 95 (OSR II)

... 166MHz MMX	$1919	
...Hz 200MHz MMX		

Monitor

CTX V L8nn 0.26dpn		$345
CTX 765 17"		$399
CTX 1785 17" 0.28dpi		
CTX 1565 20"		
	PX700 17" 0.28dpi	$462
X32 LXX mnn 20"		$CALL
X37 LXX 5000 17" 0.27		
X37 LXX nnn 14"		$CALL
	7"	$499
MAG 17" TRINITRON		$599
MAG 710V2 17" 0.26dpi		$639
	15"	$249
SONY 200SF 17"		$715
SONY 100SF 17"		$465
	17" 0.25dpi	$425
SONY 17" 0.26dpi		$365
AXION 1566 17"		$395
AXION 1566 17" 0.26dpi		$315
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VIEWSONIC 17PS 17" 0.25dpi		$655
VIEWSONIC G7TTE 17" 0.25dpi		$456
VIEWSONIC 21" 0.25dpi		$1,105
VIEWSONIC PS13 21" 0.26dpi		$1,563
VIEWSONIC PS15 21"		$1125
PANASONIC S15 17" 0.27dpi		
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HEWLETT PACKARD 820CSE	$290
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HEWLETT PACKARD 6L SE	$399
HEWLETT PACKARD 5	$1,290
HEWLETT PACKARD 6P	$745

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ELe...

Small Office/Home Office continued from page 82

cal approach to reality; and also by those looking for ideas that may later become the basis of quantitative research.

One of our favorite software tools was version 3 of NUD•IST, the software with the unforgettable name. Just as our article appeared, so did ■ new edition of the Non-numerical Unstructured Data Indexing, Searching and Theory-building program. Version 4 has ■ number of improvements that make NUD•IST even more usable for business researchers.

"Great name. What does it do?" NUD•IST ■ a program for marking up text with ideas and

tative and quantitative approaches. You can also import quantitative or database data and pre-create categories based on the imported information.

NUD•IST takes more than an afternoon ■ learn, and Tim Lavalli warns that the steep learning curve and high cost can make it ■ bad choice for a single project. It also ■ not ideal for visual data, as it is rooted in a computer language called LISP that is rich in textual tools but poor in graphics.

If you need to understand and code text, with detailed proof for your assertions, and if

the bibliography into proper form.

The real blessing of EndNote is that it knows the proper citation format for several hundred journals. If you submit to one publisher and they do not accept your article, you are not facing a laborious retyping job. Just tell EndNote to deformat and reformat in the new style, and your job is done.

There's lots more to EndNote. Its latest version bundles EndLink, a utility that lets you ■■ lect citations online and import them directly into the database without having to retype them. The newest Windows version will work as an add-in to either Windows for Office 97 or WordPerfect. ■

WebCompass has reduced my initial search time by a factor of ten.

The program orders its results by its best guess of relevance. People I need to find not only appear on WebCompass's results list, but they appear at the top.

keeping track of the ideas in ■ ordered way, with each notion connected to its supporting text. After you import a text file into NUD•IST, you can mark various sections of text with "nodes" that represent ideas. This process is called "coding." Then those nodes can be gathered together under superior nodes that represent higher-level ideas. It is easy and quick to move these nodes around, so you can very quickly rearrange your thinking. The real advantage is that you can ■ any time create a report that collects all the text in support of any given idea.

You can have NUD•IST automatically code large bodies of text. You must write short command files to take advantage of this feature, but they are not impossible and there are many examples provided. The command files ■■■ vastly simplify the annotation and coding of the huge sheaves of text one can gather in a Web search.

The new version of the program provides additional tools for getting quantitative results as well as qualitative. You can create a report on the number of Web pages that mention Madonna and do not mention Argentina, and export it to other programs for further statistical analysis. This extension is particularly valuable for those of us who wish ■ use both quali-

you need to do it again and again, then NUD•IST can be exactly the tool you need.

EndNote Two Plus

Once you have created a search strategy, found your sources, and analyzed the text in them, you need to publish your work. In all too many cases, that means you will need to write footnotes and bibliographies.

Doubtful readers will want to be able to check your sources for themselves. Enthusiastic readers will want ■ follow up on your brilliant discoveries. Both kinds will want to know where you looked, and from whom you learned.

If there were only one format for citations, life would be so simple. Instead there ■■ hundreds of formats, differing in tiny, maddening ways. If you want to submit your research to the *Journal of Anaphylaxis*, you must follow their format for citations ■ they won't even look at your work.

Enter EndNote, in Mac or Windows versions. EndNote allows you to create ■ citation database. When you want to enter a citation in a paper, you can just highlight the citation in the database and copy it to your paper. It appears as a bracketed cite. When you wish to format the finished project, EndNote will ■ through the whole document and put all the notes and

ACCOUNTING • BY DAVID A. SIMON, CPA, AND JENNIFER R. CHERNISS

Have Pocket Protector, Will Travel

Court Decision Supports Programmers; Complicates Life For IT Industry

Temps may be more than second-class employees. Large companies in technology industries have increasingly adopted the practice of hiring programmers and engineers as independent contractors to avoid payment of employee benefits.

This practice has lit the fires of ■ number of hot legal, tax, and regulatory issues, recently exemplified by *Vizcaino vs. Microsoft*, a class-action suit in which eight freelance workers prevailed (so far) against the software monolith after learning what benefits their cubicle-mates got that they did not.

The Ninth Circuit Court of Appeals acted to protect independent computer industry professionals who lack bargaining power against corporate giants. The decision thrilled many programmers and other contract service providers; however, the predictably defensive response from the largest and most influential hi-tech companies is delaying total resolution.

These poor, beleaguered megacorps accuse the Court of attributing to Microsoft a Dickensian anti-labor attitude. Whether Microsoft is a benevolent giant or the Evil Empire, its political clout—and industry lobbying—may have influenced the granting of a rare, post-appeal, full court rehearing that has been recently announced.

Although there are only eight named plaintiffs in *Vizcaino vs. Microsoft*, the class they represent may include hundreds of Microsoft workers. The case has been widely reported in the press and is likely to be one of the most important legal decisions to affect contract professionals and their employment relationships.

There has been much confusion and misinformation about the case, which is considerably more complex than its coverage in the popular press would suggest. You can read it yourself from the horse's mouth at URL: *http://www.vcilp.org/Fed-Ct/Circuit/9th/opinions*, where 9th Circuit Court decisions are available.

Roots of Controversy

Microsoft employs a core staff of technical and other workers which it categorizes as "regular employees." They receive a wide variety of benefits, including the usual paid vacations, leave, holidays, short-term disability, health and life insurance, and pensions. Regular employees can participate in a 401(k) retirement plan in which Microsoft matches fifty percent of employees' eligible contributions, and in a stock purchase plan wherein they purchase company stock significantly below market value. Microsoft also pays various employment taxes for its employees, as required by law.

The core staff is supplemented with a pool of programmers, engineers, and other technical workers who were classified as "independent contractors" or "freelancers," including the eight named plaintiffs. The company does not provide them with any of the benefits received by regular employees.

The plaintiffs were not short-term or part-time employees. Although initially hired to work ■ specific projects, after these projects were completed they had each been assigned, successively, to ■ projects. All but ■ of those named had been working for Microsoft for ■ least two years. They were fully integrated into Microsoft's workforce and were required to work on site. Rather than being paid through Microsoft's payroll department, however, they submitted invoices.

Microsoft never officially communicated the regular employees' benefit plan to the plaintiffs. On the contrary, when they were hired each was told that he ■ she would be ineligible for benefits. All eight plaintiffs had signed statements describing themselves as independent contractors and acknowledging responsibility to provide for their ■ insurance, taxes, and benefits.

Eventually, the workers learned of the benefits provided to regular employees. Moreover, they learned that the heroic IRS had examined ■ company's employment practices and had concluded that Microsoft's freelancers were not independent ■■■■■■■■■ but were, rather, common-law employees for purposes of withholding and income taxes.

> Whether Microsoft is a benevolent giant or the Evil Empire,
> its political clout—and industry lobbying—
> may have influenced the granting of ■ rare, post-appeal,
> full court rehearing that has been recently announced.

Business Solutions

Accounting continued from page 85

Where Do You Want To Go Today?

In response to the IRS rulings, Microsoft began "converting" its independent contractors. That is, it tendered permanent employment offers to some. Other freelancers were given the option of terminating their employment relationship with Microsoft completely or continuing to work at the company as employees of a new temporary employment agency (a so-called job shop).

The job shop would treat the workers as its own employees and pay the employer's share of payroll taxes. However, the job shop offered few perks, if any, and the workers would still not be eligible for the disputed fringe benefits. While some went along with this arrangement, at least one, Donna Vizcaino, simply refused to deal with the job shop. Microsoft promptly fired her.

Some of those fired or forced to work for the job shop sought judicial review of the denial of benefits. Microsoft, in the ensuing litigation, rejected the plaintiffs' claims for benefits, maintaining it was no part of the deal.

> Freelancers were given the option of terminating their employment relationship with Microsoft completely or continuing to work at the company as employees of a new temporary employment agency (a so-called job shop).

The trial court sided with Microsoft, as follows:

First, the contract between Microsoft and the plaintiffs specifically stated that no benefits were provided by Microsoft. Second, because the terms of the [benefit] plan were not communicated to the plaintiffs, they could not have become part of the contract between them and Microsoft. Thus, the plaintiffs had no expectation of receiving any benefits.

Following this defeat, the workers appealed (for technical reasons, the appeal pertained only to certain benefits).

Microsoft's welfare benefit plan provided that "Each employee who is 18 years of age or older and who has been employed for six months shall be eligible to participate in this Plan," and defines "employee" to mean "any common-law employee who receives remuneration for personal services rendered to the employer and who is on the United States payroll of the employer."

Microsoft conceded that the workers were generally common-law employees who rendered personal services to Microsoft. Because the plaintiffs were all over age 18 and had all been employed for more than six months, the Court reasoned, "the issue before us is only whether

Accounting *continued*

they were "on the United States payroll of the employer." The term "on the United States payroll," however, is not defined in the plan.

The Court said that provisions of the plan should be interpreted in an ordinary and popular sense as it would be by a person of average intelligence and experience. It then turned to the 1980 edition of the Random House Dictionary, and found that payroll means "a list of persons to be paid, with the amount due each."

That was clear and ordinary enough for the judge, who concluded that Microsoft's benefit plan should reasonably extend to these freelancers. Moreover, the court would not allow Microsoft to argue a different definition for "payroll," saying that would merely create an ambiguity in the term "payroll." Under various legal principles, interpretation of an ambiguous phrase would be resolved in favor of the workers.

Because the plan extends participation to all common-law employees, the non-regular workers are entitled to enjoy the plan as would any of Microsoft's employees who are paid through the payroll department. The court found:

(1) Even though the plaintiffs had signed papers designating themselves ■■ independent contractors, that label does not control their employment status; and

(2) If the signed papers were found to exclude the plaintiffs, this exclusion would conflict with the benefit plan, which provides coverage for all eligible employees and could result in loss of the plan's tax-favored status.

Poor Mr. Bill

As explained in the dissenting opinion, Microsoft has a payroll department, and it has a separate accounts payable department. Because the plaintiffs were regarded both by Microsoft and by themselves ■■ independent contractors, Microsoft did not budget or pay for them through the payroll department.

As freelancers, the plaintiffs worked for Microsoft with the understanding that they were not entitled to the benefits for which they sued. One legal commentator quipped, "The Bible tells ■■ it is a sin to hold a worker's wages overnight. It does not tell us that the worker must be paid something more than was agreed."

Indeed, contract techies typically assume—or hope—compensation is high compared ■■ a regular employee's wage, to make up for the fact

they don't receive benefits. In essence, Microsoft may have felt double-charged, believing it had contracted to pay the workers a premium in lieu of benefits, and then finding out that it had to provide the benefits nonetheless. The plaintiffs may have realized a windfall.

Temp Workers Of The World, Unite

The Court of Appeals decision was written by Circuit Judge Stephen Reinhardt, who, by reputation, abhors abuses to which independent contractors are often subject.

Microsoft's strategy was to try to limit the case to a technicality over the meaning of the words "United States payroll" as used in many employee welfare benefit plans. Judge Reinhardt, however, was more concerned with

issues of contractual fairness when independent contractors have to deal with large corporations. He pointed ■■ that the parties have unequal ■■negotiating power, unlike cases in which employment agreements are collectively bargained for. If Microsoft ruled labor practices as it does the PC, it would be too easy for all employers to circumvent employee benefit coverage requirements and deny plan benefits to its common-law employees.

Conservative commentators hold that the court's decision amounts to a flakey interpretation of a contract. They find it hard to see ambiguity in an employment agreement specifying that employee benefits are not part of the compensation. Following this reasoning, however, Microsoft might then be exposed to disqualification of its benefit plan by the IRS, for failure to meet minimum participation requirements.

Microsoft's employee benefit plans were set up the way they were in order to qualify for substantial tax benefits to the company. Congress intended to limit those tax benefits only to employee plans that are nondiscriminatory. Now Microsoft wants to exclude some common-law employees but not others, yet still retain all the tax benefits of a plan that doesn't discriminate.

The Ninth Circuit's decision was certain to be controversial. It has raised the ire of the employee benefits industry, which tends to ally with big business. The decision threatens to complicate employers' compliance with qualified benefit plan rules, and raises the specter of major liabilities to employers who run afoul of minimum participation requirements, as well as threatening huge potential payroll tax liabilities.

Oakland labor attorney Arthur Lazear would not offer Microsoft a single byte of condolence. "Society and the government have a substantial interest in labor contracts. The Fair Labor Standards Act and child labor laws are designed to grant rights that cannot be given up in response to pressure from employers. ERISA, the legislation that protects the right of workers to obtain benefits, is similar legislation."

Don't Try This At Home

If you have supplied technical services on a long-term contract basis, you may be wondering if you should sue to recover the value of employee benefits that you never received. The answer depends, in part, upon whether you wish to remain employable.

The named plaintiffs in the Microsoft case represented perhaps hundreds of workers who

> **If you have supplied technical services on a long-term contract basis, you may be wondering if you should sue to recover the value of employee benefits that you never received. The answer depends, in part, upon whether you wish to remain employable.**

Accounting *continued*

the court certified as a class, and who are able to maintain a degree of anonymity In general, however, many employers may tend to disfavor engaging applicants who are apt to turn around and sue them. Ordinary consultants who depend upon goodwill and personal relations in a small business community should be cautioned before attempting such a feat

Tim Hoffman, another Oakland attorney specializing in employment and benefits litigation, says the system makes it all too easy for very large employers to have their way with workers who don't bargain collectively. The most powerful tool now available to curb abuses after the fact is a class-action lawsuit

As more such actions are brought, however, employers will immunize themselves with new defensive tactics. Ultimately, *Vizcaino vs. Microsoft* could prove a mixed blessing for independents.

Already, many contract techies complain that it's hard to get hired unless you're incorporated

This case could be to turn up the screws. For the small service provider to incorporate and navigate around a host of complicated restrictions designed for employee leasing agencies and personal service corporations, and ensuring that the corporate entity will be recognized for tax purposes, a substantial burden may be added to the cost of doing business. ∎

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Vizcaino vs. Microsoft Corp., 97 F.3d 1187 (1996)

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Alvin D. Lurie
Not A Soft Landing For Microsoft
73 Tax Notes 1359 (December 16 1996)

Lee A. Sheppard
Dependent Contractors Part 2, Microsoft's
96 Tax Notes Today 206 6 (October 22 1996)

BY ROYAL ■ FARROS

The Making Of An Internet Startup: Part IX

Assessing The State Of The Internet

Quick iPrint

Update: More strategic partnerships. More Web site awards. More happy customer letters. And a lot more work to do in front of us!

The State of the Internet Message

The best summary of the State of the Internet is the cover of *WebWeek* a few issues back. The cover story on the left talked about the bankruptcy of high-flying Jim Manzi's Nets. Inc. On the right the story told of the insatiable demand ■ Wall Street for the Amazon com offering.

Acronyms are colliding: GBF means "Go Broke First" as much as ■ means "Get Big Fast." It's the infamous "Internet Time" at work. In fact, if M.C. Hammer recorded "Internet Time" instead of "Hammer Time" a few years back, he would have filed for bankruptcy *before* the video was released. (What's the worst lyric to ■ cred017tor's ears? "Can't touch this!")

Or maybe ■ means that the industry ■ going

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through another one of those all-important, transitional "Inflection" points? Clearly some companies ■ "getting it," that is, figuring out how to do business on the Internet, while others have just learned how to efficiently go through gobs of venture capital with little to show for the effort.

Here are some general observations and hard-fought lessons as we circle the mid-way buoy of 1997

Living On Internet Time

If Einstein were still around, he might have restated his famous equation to "E=m!2" where "l" is the speed of development on the Internet, sometimes considered as fast as light.

Things on the Internet are instantaneous, at least when doing business for the desktop. Like ■ shark, smart companies do everything it takes to keep moving forward. Those that lose momentum suffocate.

Of course, we all know this ■ the case for development. But everyone's marketing and sales departments should feel *frenzied* as well. The smart companies are taking handfuls of spaghetti and throwing them up against the wall to see what sticks. Experimental relationships Experimental promotions. Experimental price schedules Hey, this is the Internet; if ■ doesn't work, it's easy to change—and fast

■ At First You Don't Succeed...

It's well-chronicled that Microsoft pulled off one of the most stunning and spectacular feats in all of business history when it was able to turn on a proverbial dime. Literally, overnight, Microsoft became an Internet company

All of a sudden Microsoft's previously infalli-

ble strategy seemed tired, so Bill fixed it, even though he had ■ lot more momentum *against* this change than almost everyone *combined in* the software marketplace

Like Microsoft, Internet winners are constantly revisiting their objections and evaluating their progress. Once an admirable trait, dogged determination is simply putting some companies in the dog house. Recently, however, I get the sense that this is happening at heightened levels. Almost everyone I speak with is "reviewing" their business propositions. (Another clue we're at an inflection point.) While this is short term bad news for the industry, the smart companies that are doing this stand the best chance for survival in the mid- to long-term.

Banner Blues

After ■ few months of light advertising, I can say with certainty that a fast way to lose money is to do a little advertising. Unfortunately, you can't scale to critical mass just by taking small bites. This presents ■ difficult dilemma for all of us trying to be sensible with our investment dollars: We need to get our name out in front of the public, but we're not ready to go broke doing so.

We've taken ■ fairly disciplined approach when ■ comes to advertising. We're experimenting, and we're tracking. There's no doubt that we'll eventually spend a lot of money on banners, but we'll do it when we get a sense of what will work and what doesn't.

Will we miss the opportunity to establish our brand identity before other competition comes into play? Possibly. But given our aggressive ■ partnering and press strategies, we'd like to think we're taking the *effective*, balanced approach We want to Get Big Fast, not Go Broke First

Fears Unfounded

We were warned that we'd lose a lot of business if we didn't supplement our Web shop with ■ 800# or fax# to take orders for people who were worried about credit card issues. One person even said the loss could be as high as 50%!

I'm happy to say that the buying public is past the media-driven credit card security scare. We've gotten about ■ handful of emails from people who said they weren't ordering because there ■■■ no alternative to entering a credit card online, an insignificant number relative to our

total orders to date. Indeed, people like doin[g] business online just fine

One important note, though. What enable[s] this trust is responsive, "no bull" customer ser vice. Everything from answering custome[r] emails quickly, to getting the goods delivered a[s] and when promised. People don't trust technol ogy; people trust people

> The smart companies are taking handfuls of spaghetti and throwing them up against the wall to see what sticks.
>
> ## Experimental relationships.
>
> ## Experimental promotions.
>
> ## Experimental price schedules.
>
> Hey, this is the Internet; if it doesn't work, it's easy to change—and fast.

The State of the Internet

All the signs are positive *but* the dollar sign[s]. The only "magic formula" that's working is sell ing the building blocks to existing Internet com panies

This doesn't mean that e-commerce isn'[t] working . it most definitely is! But, like an[y] business, it takes time and intelligence to grow. The best news that I can report about the State of the Industry is that for the firs[t] time that I can recall, Internet companies are finally thinking with their business hats and not their bank accounts. And that's a great sign for the future. ■
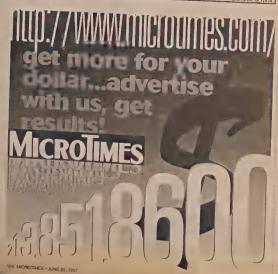
Hurry Up And Wait

The Wireless Market Evolves

* * * * *

> he most ▬ PC of the ▬ paradigm will be a digital cellular phone. It will be as mobile ▬ your watch and as personal ▬ your wallet; it will recognize speech, it will navigate streets, it will collect your mail and your paycheck, it will conduct transactions. It will command an Internet address and ▬ Java run-time engine. It will link to ▬ variety of displays, keyboards, and other input-output gear through radio frequencies and infrared pulses. Every device will ▬ able to link to every other one, like a telephone."

—George Gilder, "Telecosm and Beyond Over The Paradigm Cliff," Forbes ASAP,
URL: http://207.87.27.10/asap/97/0224/029.htm

At last month's CSPA (http://www.cspa.com) conference on "Emerging Platforms for Interactivity and Connectivity," Unwired Planet (http://www.unwiredplanet.com) CEO Alain Rossmann demoed his company's technology to an intensely interested audience.

Partnering with a number of telcos with wireless offerings, Unwired Planet helps turn a cellular phone to a universal communicator. In ▬ real-time, non-canned demo, Rossmann got ▬ the Internet with his cell phone, checked and answered email, made calls requested in said email, and incidentally researched movie listings in Tacoma. He didn't make reservations, but he could have.

The burning question on everybody's mind was where they could go buy one of these fine gizmos. The answer, alas, was that for the present, the product is only available to corporate accounts in large quantities; the consumer-market implementation is still some time away. Nonetheless, between potential business partners and prospective customers, Rossmann was mobbed.

As Rossmann's in a fine position ▬ attest (long-time readers will recall his appearance ▬ our cover in January 1993 touting the EO Personal Communicator, which disappeared with its parent company into AT&T shortly thereafter), wireless communications represent a hot, promising, and perilous market.

Indeed, as suggested by the cover story on Hedy Lamarr, whose 1941 invention is only now coming into its own, it's very difficult ▬ predict where and when technical excellence, clever application, consumer demand, and affordable pricing will converge in a successful product.

Hordes of hopeful vendors pursue the holy grail of untethered communications with pagers, cell phones, PDAs, wireless modems and ▬ host of other devices, but for every successful breakthrough (e.g. U.S. Robotics' Palm Pilot) there's ▬ myriad of promising but failed products. On the other side, entire mobs of would-be customers pursue the impossible dream of finding an affordable product that does something they actually need, as contrasted to a cool toy. In the middle ▬ a lot of problems and solutions in search of each other, with the advent of the Internet adding a frenzied quality to the quest.

So far, the successful companies ▬ to be finding a manageable niche—whether it's high-end global communications or consumer-oriented Net access—rather than attempting to solve huge problems. The entire market is clearly in ▬ infancy, its growth simultaneously driven by huge potential demand and limited by very real technical and economic factors.

Not long ago, Dave Hughes (dave@oldcolo.com), often featured in these pages as a wireless advocate and ▬ implementer of spread-spectrum technology in the unlicensed frequencies and ▬ dauntless defender of their license- and fee-free status in the face of FCC auction plans, spoke at a meeting of Smart Valley in Palo Alto.

At a time when telephone companies were bemoaning the fact that demand for Internet connectivity ▬ fast exceeding their ability to supply service, and suggesting that the next infrastructure update should be financed by imposing higher charges on ISPs, Hughes demonstrated how devices utilizing the same spectrum ▬ garage door openers could deliver fast Internet connectivity for the one-time cost of radio purchase, completely bypassing the telcos, their bottlenecks, and their charges.

Others in the wireless community, particularly those coming from more traditional and corporate-oriented areas of the industry, ▬ maintained that this "solution" is in fact fraught with technical problems and not commercially viable (See, for example, http://www.microtimes.com/debate.html) Advocates ▬ Gilder, however, point to Qualcomm (http://www.qualcomm.com) and other vendors as proof ▬ technical superiority ▬ commercial viability.

Even proponents of the technology recognize that there ▬ still numerous problems to be solved, and in the interest of reality checking, ▬ report on some torture-testing.

Last year, looking at wireless Internet access, we visited Metricom (http://www.metricom.com), whose Ricochet Internet service utilizes spread-spectrum technology ▬ a license-free band ▬ allow low-cost wireless access. For users lucky enough ▬ live and work ▬ the served area, this can ▬ a godsend; however, while Metricom works night and day to install more repeaters and to improve service, performance varies ▬ good deal according to geography and network infrastructure.

In ▬ saturated with repeaters, the technology performs really well—at the CSPA conference, PointCast (http://www.pointcast.com) executive Joseph Pistritto demoed his product on a Ricochet-equipped laptop, which, on the Stanford campus, ▬ quite ▬.

Ricochet customers will soon have the option of using ▬ faster and ▬ compact radio than the current offering. Meanwhile, other companies (e.g. Breezecom, http://www.breezecom.com) ▬ making other devices ▬ take advantage of the unlicensed spectrum to deliver T-1 speeds ▬ corporate and ISP clients, allowing them to bypass land-line installation charges and monthly telco costs.

For ▬ arduous test, Dewayne Hendricks reports on installing wireless networks in Mongolia.

Spread spectrum is not ▬ only promising technology for untethered communications, and many specialized solutions ▬ likely to ▬ from many providers.

The telcos ▬ far from idle, offering ▬ ▬ of voice and ▬ options based on a variety of technologies at ▬ variety of price points. Paralleling the development of the Internet is ▬ growing range ▬ ▬ and options, from the fast and pricey to ▬ more pedestrian ▬ ▬ affordable. Infrastructure and plumbing issues, to say nothing of technical problems, will ▬ significant ▬ ▬ the next decade—but there ▬ a huge ▬ to devise solutions.

As Gilder says in the ▬ article, "With real ▬ less market share ▬ well under 5% ▬ telephony and under ▬ in Internet ▬ the race has just begun."

—Mary Eisenhart

The Birth Of S

Spread Spectrum

How "The Bad Boy Of Music" And "The Most Beautiful Girl In The World" Catalyzed A Wireless Revolution —In 1941

By Anna Couey

The Birth Of Spread Spectrum

Today, spread spectrum holds the potential to revolutionize wireless communications, because it renders radio spectrum—a resource currently deemed ██ precious can afford to buy it—plentiful enough for all of us.

Spread spectrum is a highly efficient way of using radio waves to communicate, because it enables multiple users to share radio frequencies at the same time, without interfering with each other. Up until now, each radio station, for example, has been allocated a specific frequency over which to broadcast their programs. Since there are only so many bands of frequency within the ██████ radio spectrum, frequency bands are carefully allocated by the FCC for particular uses—such ██ commercial broadcasts, military communications, police radios, ham radios, etc.

Currently the US government licenses radio frequencies to the highest corporate bidder. Spread spectrum stands the concept of spectrum scarcity on its head, and just might rearrange who has access to radio waves in the future. For now, spread-spectrum radios provide high-speed wireless access to the Internet, with absolutely no telephone fees.

However, like many technology inventions, spread spectrum was designed for an entirely different purpose. The story of its birth and evolution is an epic drama of legendary proportions: World War II, avant-garde music and Hollywood all had a role in its creation.

At the center of the story is a beautiful young woman, whose creativity and intelligence led her to revolutionize communications technology into the 21st century.

The Road To Hollywood

Today, Hedy Lamarr lives in quiet seclusion in Florida. During World War II, however, she was a glamorous Hollywood star, "the most beautiful girl in the world." Her real-life story is arguably more alluring, and certainly more heroic, than any role she played on the silver screen.

Born Hedwig Maria Eva Kiesler in Vienna, Austria, sometime between 1913 and 1915 (history is not definitive on this point), Lamarr came to Hollywood shortly before World War II at the invitation of Louis B. Mayer and Otto Preminger to work for MGM. She had already made a memorable impression on the big screen for her revealing performance in *Extase* (*Ecstasy*), a 1933 art film that shocked societal sensibilities of the time for its frank sensuality.

Behind the star image lies a complex person who defies stereotypes. Lamarr married six times and, besides being an actress, painted abstract works of art and designed inventions. "People assume perhaps she wasn't intelligent because she was so beautiful. But she really had a mind... she held her own with anybody," says Peter Antheil, who remembers her visiting his parents' home when he was a child.

In Hollywood, the beautiful actress found success, and the world at her feet. But she didn't forget that World War II was brewing in Europe, and she was determined to do something about it.

"People assume perhaps she wasn't intelligent because she was so beautiful. But she really had a mind...she held her own with anybody," says Peter Antheil.

Technology And War

Lamarr had strong personal reasons to be against the war. She had recently escaped from her first husband, who was selling munitions to Hitler.

Fritz Mandl was one of Europe's largest armaments manufacturers. He had become the primary supplier of armaments to the Austrian army during World War I, when, it later turned out, he and Austria violated the Versailles Treaty by selling weapons to Hungary. Moreover, he appeared to be developing a reputation for selling "bombs and bullets and airplanes to Hitler and whoever else wanted to buy them," as Anthony Loder, Lamarr's son, describes it.

Lamarr and Mandl married in 1933. It was not a happy marriage, at least as far as Lamarr was concerned. Mandl was extremely possessive, and kept her "like a slave," she says, under the watchful eye of her maid. To the public, she ██████ Mandl's showpiece, dazzling his clients and the cream of Austrian society. But Nazis were ██ the rise, and Lamarr had ██ use for them. She didn't just sit pretty.

Mandl was conducting research in weapons control systems. At the time, research was indicating that radio waves were better than wire for controlling weapons such as torpedoes. For one thing, it was hard to make ██ wire long enough (even ten miles was too short) to ensure that the communications channel between a commander and a torpedo wouldn't break, leaving the torpedo to chart its own course. Radio waves solved the problem of needing a physical communication connection between commander and torpedo. But radio waves had a serious flaw: enemies could access the same radio wave and jam it.

As Mandl's wife, Lamarr was exposed to military technology ideas. By her own account, Mandl kept Lamarr at his side during his business meetings, a silent witness to technical discussions that foreshadowed World War II. Lamarr had no formal education in military technology, but she had a mind capable of understanding what she heard.

After four years of marriage to Mandl, Lamarr drugged her maid and left him forever. She made her way to London, where she came in contact with Louis B. Mayer of MGM, who arranged for her to come to the US. On the voyage across the Atlantic, Mayer gave her the name "Hedy Lamarr," in part inspired by the actress Barbara LaMar, and "...for the seal," Lamarr's son, says.

Player Piano

Lamarr met George Antheil at a party in Hollywood, and they became friends.

"George was 5' 3" maybe, he was not very tall, but he was extremely charming—especially with women," says composer Charles Amirkhanian, who manages the George Antheil Archive.

Antheil had been at the forefront of experimental music in the 1920s, part of the first generation of artists that explored mechanical music as an expression of industrial society. "George was one of the first people to work with the player piano as a legitimate instrument for composed music," says Amirkhanian. Antheil's famous "Ballet Mecanique" was writ-

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The Birth Of Spread Spectrum *continued*

PHOTO COURTESY ANTHONY LOOER

> In Hollywood, the beautiful actress found success, and the world at her feet. But she didn't forget that World War II was brewing in Europe, and she was determined to do something about it.

ten for twelve player pianos, ▦ airplane propeller and a symphony.

Antheil was quite famous in Europe, and had done a lot of creative work there. In the early 1930s, he had received a Guggenheim fellowship to go to Europe. But when Hitler began to close the German opera houses that presented modern music, Antheil returned to the US. Not only ▦▦▦ his own source of work threatened (these very same institutions were among those who commissioned his compositions), Antheil "was very angry about Hitler's influence on the ▦▦▦ in Europe. He actually had ▦ leave Europe because of Hitler, or felt he did," says Amurkhanian.

Antheil also emphatically opposed the Nazis. His son Peter remembers, "My father wanted to go into the army, but he couldn't; he was too old. But he wanted to do anything he could to help the war effort. I remember that they felt very strongly about it, both Hedy and my father, about war, and having to defeat the enemy."

In that context, Lamarr told Antheil about her idea for a Secret Communications System that could guide torpedoes to their target without being intercepted by the enemy, by sending messages between transmitter and receiver over multiple radio frequencies in a random pattern. The message would move ▦ quickly across the radio waves that anyone tuning in to a particular frequency would only hear a blip, and would be unable to intercept the message.

The only problem was how to ensure that the transmitter and receiver would stay ▦ synchronization as they moved through the frequencies. Lamarr thought Antheil could help solve the synchronization problem. As a result of his musical experiments, Antheil had a good deal of experience with sound synchronization.

He ▦▦▦ indeed hit on the solution for the invention to function: paper rolls perforated with a pseudo-random pattern would delineate the frequency path. Two rolls with the same pattern would be installed in the transmitter and receiver. If the two rolls were started at the same time, and one stayed at the launch point while the other was launched with the torpedo, and "if you had good rotary stability ▦ the motor driving the paper rolls, you'd maintain the synchronization right on down to where the torpedo hit the ship," explains Dr. Robert Price of Consulting in Electronics Systems. Just like the player piano rolls in "Ballet Mecanique," in fact, the two inventors designed their system to use eighty-eight frequencies—exactly the number of keys on ▦ piano.

Patriotism And Barriers

Lamarr and Antheil knew they had something that could help win the war. They sent their invention to the recently established National Inventors Council, and Antheil claimed that Charles Kettering himself, director of the Council and research director at General Motors, encouraged them to patent it. The two inventors worked with ▦ MIT electrical engineer to iron out some technical kinks ▦▦ submitted their patent proposal in 1941. On August 11, 1942, Lamarr and Antheil were awarded US Patent

Number 2,292,387 for the Secret Communications System.

Rather than develop the patent commercially, "they gave it away to the government for the war effort," says Peter Antheil. Despite the fact that they stood to gain financially by holding onto the patent—and Antheil in particular was always struggling financially—like many people in that time, they were both committed to helping to defeat the Nazis. "It was a totally different culture then. I ▦▦ remember it even as a small child, and it ▦▦▦ kind of a reflection of the way people felt ▦ those days for George and Hedy ▦ give the invention ▦ the government to help win the war with...there was a tremendous feeling of patriotism," recalls the younger Antheil.

The Navy, however, refused to take the Secret Communication System seriously. Technologists questioned whether the paper rolls would hold without breaking, whether the rotary motor that synchronized the rolls would be accurate enough, and whether the paper rolls could be made small enough ▦ fit inside a torpedo.

Despite Antheil's active lobbying and insistence that the US Navy needed the invention to compete with Germany's sophisticated military technology, the Secret Communications System was never used during World War II.

Antheil was convinced that the Navy's reticence was due to an anti-cultural bias: "In our patent Hedy and I attempted to better elucidate our mechanism by explaining that certain parts of it worked like the fundamental mechanism of a player piano. Here, undoubtedly, we made our mistake. The reverend and brass-headed gentlemen in Washington who examined our invention read no further than the words 'player piano.' 'My God,' I can see them saying, 'we shall put a player piano in a torpedo.'"

Not only was the invention rebuffed, but ▦ were Lamarr's efforts to contribute her considerable technical abilities to the task of defeating Hitler. When she offered to come to Washington, D.C. and work at the National Inventors Council, she was told she'd be of greater service to the war effort by remaining in Hollywood and using her star status to raise war bonds. She did indeed raise $7 million for the war effort, but her intellectual talents remained untapped.

From Navy To Commerce

When the war ended, Lamarr and Antheil put the invention behind them. It was not to be implemented in Antheil's lifetime.

However, while seemingly inactive, the patent was not forgotten. Electronic technologies were beginning to develop, and in the 1950s, engineers from Sylvania Electronic Systems Division began ▦ experiment with the ideas in the Secret Communication System patent, using digital components ▦ place of the paper rolls. They developed ▦ electronic spread-spectrum system that handled secure communications for the US during the Cuban Missile Crisis in 1962. By then, the Secret Communications System patent had expired.

> Mandl and Lamarr on horseback in the mid-1930s

The Birth Of Spread Spectrum _continued_

It was in the early 1960s that the term "spread spectrum" began to be used. Today it refers to radio communications that employ cryptographic subsystems (like the pseudo-random patterns on the Secret Communications System's paper rolls), use a wide frequency spreading factor (much wider than typical voice telephone communications), and are not dependent on a particular type of tonality (such as a human voice) in the transmitting waveform.

"Hedy Lamarr and George Antheil were the first to satisfy all three ingredients," says Price. Their spread-spectrum technique is today called "frequency hopping" because the transmission jumps from frequency to frequency.

Initially, spread spectrum remained a military communications technology, and even today "the Defense Department of the United States has a huge investment in spread spectrum of a frequency-hopping type now, just like Hedy Lamarr's, which protects our assets all over the world," notes Price.

In the mid-1980s, the US military declassified spread-spectrum technology, and the commercial sector began to develop it for consumer electronics. Today, it's an increasingly important component of mobile telephony. CDMA (Code Division Multiple Access) technology uses spread spectrum Spread spectrum has proven highly useful in cellular telephones, because its inherent encryption guarantees better privacy for cellular phone users. The technology has also proven to be an extremely efficient method for using radio waves. Rather than requiring each transmission to use its own frequency, spread spectrum enables people to simultaneously communicate over the bands of spectrum without appreciable interference. Thus, as people buy cellular phones, the increasing demand for spectrum can be accommodated by sharing the same frequencies.

> "The reverend and brass-headed gentlemen in Washington who examined our invention read no further than the words 'player piano.' 'My God,' I can see them saying, 'we shall put a player piano in a torpedo.'"

Spread Spectrum And The Internet

Spread spectrum's efficient use of available bandwidth also holds great potential for connecting small rural communities and other outlying areas to the Internet.

Phone companies much prefer to lay the wires for Internet connections in densely populated communities, where the economies of scale give them a large customer pool While such a solution may make business sense for phone companies, it could have a devastating social impact by further isolating those outside the served areas from participation in the growing information economy. The problem is further exacerbated as national telephone systems around the world give way to privatization, for telecommunications companies unlike governments, have no obligation to provide a baseline of to all.

Once again, wireless technology appears to be more practical than wire by reducing the need to lay expensive cable across vast distances. Of the wireless technologies currently available, spread spectrum is affordable and experiments are proving that it is effective. The Latvian Research Network (LANET) has implemented a wireless Internet access network in Riga, the capital city of Latvia.

Recognition At Last:
Hedy Lamarr & George Antheil Receive EFF Award

A MERE HALF CENTURY AFTER HEDY LAMARR AND GEORGE ANTHEIL broke through the conceptual impasse in remote weapons control and invented spread-spectrum technology, they were belatedly honored for their achievement.

The Electronic Frontier Foundation gave the two inventors a special award during its sixth annual awards ceremony at the seventh Computers, Freedom & Privacy Conference in March Lamarr's son, Anthony Loder, received the award on the famed Hollywood actress' behalf, as she was unable to attend the ceremony. Charles Amirkhanian, who maintains the George Antheil Archive, received the award on behalf of the late composer.

"Ironically, this tool developed to defend democracy half a century ago promises to extend democracy in the 21st century," notes Mike Godwin, staff counsel for the Electronic Frontier Foundation.

Spread spectrum is a wireless communications technology that utilizes radio waves to send communications from one person to another. Historically, radio waves have been considered to be a limited resource. The quantity of available radio waves is divided into bands of frequencies Currently, the US government licenses the right to control a particular band of frequencies to the highest bidder—typically a very large corporation A single radio station, for example, is allocated a particular frequency to broadcast its programs With the advent of wireless consumer communications devices, such as cellular phones, demand for access to the airwaves has increased.

However, spread-spectrum technology works effectively over a range of frequencies heretofore considered unusable, thus opening up a whole new territory for wireless communications At the same time, spread spectrum allows for the sharing of frequencies, so that it actually reduces the scarcity of radio waves to such an extent that the old system of treating bands of frequency as high-priced real estate is becoming obsolete.

Lamarr and Antheil gave their invention to the US government to help win World War II Unimplemented until 1962, during the Cuban Missile Crisis, and classified as a military secret until the 1980s, spread spectrum and its glamorous origins have been obscure, known only to a few highly technical specialists Lamarr and Antheil have never received any financial remuneration for their invention, even though today it is used in over forty commercial products.

The Electronic Frontier Foundation presents awards to "recognize individuals who have made significant and influential contributions to the development of computer-based communications or to the empowerment of individuals in using computers."

The Electronic Frontier Foundation received the award nomination for Lamarr and Antheil from Dave Hughes, who learned of their invention while conducting wireless research with a National Science Foundation grant. Hughes investigated the story and posted his findings on the WELL online conferencing system where the press picked up the story Numerous seconds to the quickly followed Hughes' proposal.

On hearing of the award, Lamarr said quick-tongued, said, "It's about time."

—Anna Couey

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Wireless

The Birth Of Spread Spectrum

The system has been in operation for three years, and its develop ▪▪▪ believe that LATNET's experiences "should be of interest to net workers of developing countries where communications infrastruc ture is weak and wireless communications are not over-regulated. Wireless IP networking might be a cost-effective solution ▪▪▪ in industrial areas of the world." Guntis Barzdins and John Tully have published a paper describing LATNET's setup on the Web at *http://www.latnet.lv/latnet/radiolink/HTMLDocument.html*

Dave Hughes (*dave@oldcolo.com*) agrees. Well-known on the elec tronic frontier for his work to bring affordable Internet access to eth nically and economically marginalized communities, Hughes has received a National Science Foundation grant to investigate wireless Internet connectivity for rural education. He maintains the NSF wire less project test site that documents wireless Internet access prospects in the US (as well as ▪▪▪ archive of information about the Lamarr-Antheil invention) at *http://wireless.oldcolo.com* . Hughes' experi ments in establishing affordable Internet access, both in public schools in rural Colorado and in Mongolia, have convinced him that spread spectrum is the technology to bring cost-effective Internet access to the far corners of the earth.

Hughes likes to point out that even today, one can access the Internet using a spread-spectrum radio at a T-1 level connection with out incurring any telephone charges or monthly service fees, "just the cost of the radio."

Spread spectrum ▪▪ affordable because for one thing, it makes spec trum plentiful. "The latest studies at MIT (Ph.D. Thesis by Tim Shepard, 1995) prove that *millions* of radios can operate simultane ously in the same space in metro(politan) areas. Which overcomes *the* main limitation of radio, which is that radios interfere with each other if they are in power range of each other," says Hughes.

With so much spectrum available, the current FCC practice of licens ing specific bands of frequencies to specific corporate users is of ques tionable necessity. As Hughes pointed out ▪▪ the FCC recently, it's simply not a cost-effective way to bring rural communities onto the Internet.

"Now that we have, for ▪▪▪ practical purposes, ▪▪▪ unlimited spec trum," exhorts Hughes, "let's get serious about using the 'public spec trum' for 'public purposes' like connecting up all 84,000 schools to the nearest POP (Point of Presence—an Internet node), and all fifty-five million students at home, plus three million teachers, to the school servers, free. Just buy the radios, not the services. And save the taxpay ers—for the T-1 link from the schools only, about $16 million a month which otherwise will go into the pockets of the telcos, whose 'right' to such income I really don't see ▪▪ the Constitution."

For The Common Good

Once again, spread spectrum is in a position of potentially making a tremendous contribution to the public good. It's not exactly what Lamarr and Antheil had in mind when they invented the secret Communications System, but, Anthony Loder says, his mother is glad that she "did something that could be good and useful for people, and for the country, and for the world."

And it has only taken ▪▪ years for us to realize that the unlikely col laboration of a celebrated movie star and an avant-garde composer could possibly invent a communications system that is still at the forefront of telecommunications technology. ■

n Ulaan Baatar, Mongolia, severe weather conditions prevail, the wired telecommunications infrastructure is very poor, advanced telecommunications technology expertise is limited (although there is considerable local computer expertise), and US access ■ Mongolian scientific and research facilities ■ highly constrained by lack of normal Internet connections.

Last year, some of us went to Mongolia to integrate a series of data radios into a wireless network, and then field-test them. Our purpose was to build on and apply knowledge being gained from the "Wireless Field Test (WFT) Project for Education," funded by the National Science Foundation (NSF) and run by Dave Hughes of Old Colorado City Communications, in Colorado Springs, CO

The Problem

The expedition's mission was an attempt to remedy the lack of a suitable wired telecommunications infrastructure in Mongolia, including across its capital city—a problem typical of thousands of cities in underdeveloped countries. "Suitable," in this case, means public or private circuits capable of carrying data with the reliability and bandwidths necessary for scientific research between institutions, increasingly equipped with advanced in-house computer and even local area networks

As ■ result of this deficiency, the primary institutions in Mongolia, such as the Mongolian Technical University, the Mongolian Academy of Sciences and the many other educational facilities which reside in the capital city are inaccessible (via data link) to US scientific institutions, researchers and students

What exists is a poor and obsolete government postal, telephone, and telegraph voice-telephone system, a holdover from when the Soviet Union controlled Mongolia. Efforts to use even late model error-correcting phone data-modems ■ link the computers in the various institutions is only partially successful, since the non-digital circuits are so old. It is difficult to maintain even ■ 14.4Kbps connection with-■ ■ the line dropping many times in an hour

As ■ result of the first step to provide Internet access to Mongolia, NSF funded the establishment of a costly ($72K/yr) satellite Internet link. This 128K link, provided by Sprintlink, only reached one set of computers in a single building, in the central part of the city, by direct wiring. The PTT has neither the resources nor the expertise to provide even the lowest speed (56Kbps) wired circuits to connect the numerous other institutions.

The "last mile" problem of connecting this

Wireless In Ulaan Bataar

Learning From A True-Life Mongolian Network Adventure

By Dewayne Hendricks

satellite link to the institutions (actually about one to ten kilometers from the satellite ground station), which must then distribute the signal to their own wired intranets, had so far defeated efforts to link it by local telephone facilities. In this respect, Mongolia ■ typical of scores of underdeveloped nations with ■ poor telephone infrastructure, too limited ■ adapt to modern requirements for institutional datalinks to and from other nations, especially the US. Wireless datalinks provide one possible general solution to this problem, not only in Mongolia, but in many other countries.

Challenges

A number of challenges made this a difficult project, as well as one from which valuable lessons and techniques were learned for application elsewhere.

• The weather is more severe in Ulaan Baatar than in the areas in Southern Colorado where our wireless field-test project has been implemented. High winds and average temperatures from -15° to -25°C for entire winter months will subject the radios, connectors, shielding materials, and antennas to extremes of cold and wind

The question was whether ■ not economical commercial-grade radios and systems could handle the weather and give similar MTBF (mean time between failure) times to those systems operating in milder climates.

• Whether the electromagnetic environment from the equipment that exists ■ Mongolia today, some from systems developed and deployed by the Soviet Union ■ the past, ■ a different technological regulatory environment, will affect the spread-spectrum dataradios that we intended to deploy, which were developed in the US and operate in environments controlled by FCC rules.

• Could the wireless network be integrated into networks made up of a mish-mash of US and foreign computer and peripheral equipment, and would interoperability be a problem?

• Given the level of in-country expertise able to help install and maintain the wireless network, could local personnel be trained sufficiently in ■ short period of time to handle the network in the future, with only the assistance of remote expertise to call upon for help?

Groundwork

The Mongolian government had permitted a group of Russian-trained Mongolian engineers to form a private technology company DataCom Co., Ltd, headed by Dr Dangaasuren Enkhbat, using facilities ■ a technical center once occupied by Soviet engineers

The NSF had turned to this company—with limited liquid assets, but ■ a suitable central facility in the capital—to provide the crucial organizational link between the satellite-based Internet feed and in-country institutions. In return for being able to eventually provide Internet service to private companies ■ Mongolia, and being given control of the satellite groundstation, DataCom agreed to provide links to Mongolian public, scientific, education al, government, and library institutions for at least two years, at no cost. With initial funding from various sources, and with help from groups such ■ Sprint, PanAmSat, Comstream NSF and the US ambassador to Mongolia at the time, Donald C. Johnson, DataCom became the first Internet Service Provider in Mongolia in December of 1995. (The top-level domain name for Mongolia is MN. DataCom maintains a Web site at http://www.magicnet.mn/)

Once the project was approved by NSF, our first task was to determine what would be required for the expedition and what we'd have ■ do once we arrived in Ulaan Baatar to deploy the wireless network. We made use of maps, videos and communications with the staff of DataCom, in order to determine exactly what types of radios would work in their environment, and what configurations and physical distributions of sites would be required for distribution of Internet services from the DataCom location. The plan was to install a basic wireless Metropolitan Area Network that would consist of eight sites, the DataCom site, and seven sites selected by DataCom. These were all universities, with the exception of the US Embassy.

Based upon our experience in the WFT project we had made a preliminary decision to use unlicensed Part 15 dataradios developed and marketed in the US by a small Boulder, CO company

Online Guide

INTERNET • BY JOHN S. QUARTERMAN

Texans Sue Spammer

ISPs Fight Back: The Inside Story

One month we opined about "Spam Considered Harmful." The next month we did something about it.

"Texans sue to recover damages for Internet 'spam', claiming electronic trespass and nuisance," says our press release of May 28, 1997 (http://www.zilker.net/ nospam.html). It gives a whole new meaning to the state anti-litter slogan, "Don't Mess With Texas."

Who Are We Suing?

To quote the press release:

"The suit claims that C.N. Enterprises and Craig Nowak of San Diego, CA, sent thousands of electronic messages selling information on "Free Cash Grants" for $19.95. The ad's content was not only misleading, but the lawsuit claims, the company's email used a false return address, causing the electronic mail boxes of several Austin residents to overflow with returned copies of the junk mail.

"According to the lawsuit, by using a false return address, those who send junk mail over the Internet can avoid the anger that results from this controversial practice. They can also avoid dealing with the thousands of "bounce" messages that result from sending email to invalid or outdated addresses.

"In effect," the lawsuit alleges, "C N Enterprises deliberately dumped tons of its

electronic garbage and pollution" into the Austin residents' mailboxes. The lawsuit claims that the use of false return addresses on junk email, and the resulting fallout on those who

own the addresses used, is illegal under the traditional common law causes of action of nuisance, trespass and conversion.

Why Sue?

My connection with the case is as an owner, with Smoot Carl-Mitchell, of Zilker Internet Park (http://www.zilker.net). The spammer sent the spam through Zilker, thus using our computing and network resources to forward it to its numerous destinations.

Spam is a huge waste of time and resources and it has no benefit to us or our customers. Not just us, either. This was the FREE CASH GRANTS spam that probably many of you, dear readers, got in your mailbox. It was also sent through other ISPs after it went through Zilker.

At Zilker, since about January of this year, we had been getting increasing amounts of spam

*Given the amount of time we've spent dealing with spam in general, **the lawsuit is actually a small part of our anti-spam effort.** We thought it was worthwhile in order to stop this spammer, to maybe collect a little compensation, and to set a precedent.*

Texans Sue Spammer

This particular spam was the last straw on ▉ already overfull mail. It caused Zilker ▉ have to put in elaborate spam blocks.

Given the amount of time we've spent dealing with spam in general, the lawsuit ▉ actually a small part of our anti-spam effort. We thought it was worthwhile in order to stop this spammer, to maybe collect a little compensation, and to set a precedent. We've since sold most of the assets of Zilker to another ISP (although Zilker Internet Park, the corporation, continues to exist), so it's not even a matter of easing our ISP operations at this point.

This was also ▉ particularly nasty spam. Like most spam, it had forged From: mail headers. Some of them weren't even syntactically correct, and those caused ▉tra bounces, some of which resulted in bounce loops between mailers as far away as Australia. This made cleaning up the spam harder than it would have otherwise been.

Why Not?

The From: headers that were syntactically correct had the address of one of our customers. That caused our customer to get hate mail from people who thought they were writing back to the spammer. It also forced us to cut off mail from her domain temporarily in order to stop the spam.

In fact, the lead plaintiff in the case is that customer, Tracy LaQuey Parker, author of books such as the early best-seller *The Internet Companion* and the even earlier *Internet Directory*, which was one of the very first books about the Internet. With her business partners Patrick Parker (also her husband) and Peter Rauch, Tracy owns the domain flowers.com (*http://www.flowers.com*), which was the domain that appeared in the forged From: headers in the spam.

Parker says: "As ▉ long-time Internet advocate, I am saddened that the goodwill spirit of the Internet is being spoiled by irresponsible individuals who forge their identity in order to make a quick buck. There are plenty of examples of legitimate commercial uses of the Internet. This isn't one of them."

Other Plaintiffs

Joining the Parkers, Rauch, and Zilker Internet Park are two organizations related to the Internet: Texas Internet Service Providers Association (TISPA), (512)303-1021, URL *http://www.tispa.org* , and EFF-Austin (512)444-5175, URL: *http://www.eff-austin.org*. TISPA successfully stopped an attempt by the State of Texas to impose a 1% gross sales tax ▉ ISPs, so it means business.

Gene Crick, TISPA's president, says "Increasingly, 'spammers' are using false return addresses to avoid taking full responsibility for the harm caused by their unsolicited commercial email. These forgeries dump huge volumes

Texans Sue Spammer *continued*

of unwanted junk mail onto Internet compa-
nies and their customers. TISPA would like to
see the court grant ▪ broad and clear injunction
prohibiting this practice."

The Counsel

Peter Kennedy and Roger Williams of George,
Donaldson & Ford, L.L.P., (512-495-1400, URL:
http://www.gdf.com) are our legal counsel.

They're among the most experienced Internet
attorneys and law firms in the country. You
may recognize them as the people who won
Steve Jackson's lawsuit against the US Secret
Service. They have agreed to take the case ▪
contingency.

A Precedent

We hope to set a legal precedent. Even if we

don't, we hope ▪ make the problem of spam
more prominent.

We ▬▬▬ to be succeeding, since even in the
first day or so the suit was covered by *Wired*,
ComputerWorld, the *Austin American-
Statesman*, and various other publications. Our
press release is also prominently featured ▬▬
the sendmail home page (*http://www.send
mail.org*), and sendmail ▪ the mailer most
widely used by ISPs.

*The From: headers that were syntactically correct had
the address of one of our customers.*
**That caused our customer to get hate
mail from people who thought they were
writing back to the spammer.**
*It also forced us to cut off mail from her domain
temporarily in order to stop the spam.*

The Spammer

As of this writing, this case is still in the legal
system, so naturally I don't want to say too
much about it, ▬▬ about the defendant.
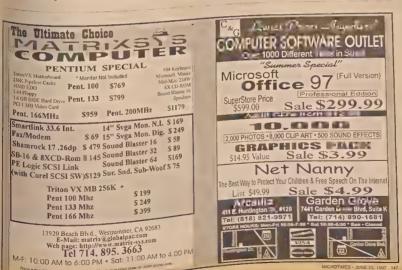
However, since he has already been quoted
in the press ▬ saying he didn't really mean to
do it, let me just say that if someone is playing
with an Uzi and shoots ▪ bunch of people it
doesn't help much to say he didn't really mean
▪ do it.

Part of the problem with spam is that people

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Make sure you're part of this important resource to generate the sales that will make your fourth quarter a success! Complete and sign the attached reseller poll form and mail or fax it back by October 1, 1997.

* *Figures based on ■■ compiled through an independent ■■■ survey, conducted by Research USA Inc., May ■*

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MICROTIMES 1997
9th Annual Reseller Poll

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Fax: (510) 946-2972
Deadline: October 1, 1997

Please use separate forms for multiple store locations

Store Name: _____
Store Manager: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____
email: _____ URL: _____

What is your specialty?
Stores:

- ☐ CD sales
- ☐ Computer hardware
- ☐ Desktop publishing
- ☐ Entertainment
- ☐ Mobile office
- ☐ Multimedia
- ☐ Networking
- ☐ Notebooks
- ☐ Peripherals
- ☐ Repairs
- ☐ Service bureau
- ☐ Small office/Home office
- ☐ Software
- ☐ Software development
- ☐ Training
- ☐ Video
- ☐ Internet provider
- ☐ Business services
- ☐ Co location
- ☐ High-speed access
- ☐ Web page development

List your top 2 specialties and in-house expert for each:

Specialty   Expert
1. _____
2. _____

What software operating systems does your business support?
☐ Windows NT ☐ Windows 3.X ☐ Windows 95 ☐ MS-DOS ☐ UNIX ☐ Macintosh ☐ Novell ☐ OS/2 ☐ Other

What special value-added services (e g., service, training, support, warranties, return policy, etc.) does ■■■ business offer? *(Please keep responses under ■■ ■■■■ or ■■ edit them to fit available space.)*
_____
_____

Are you a vendor-authorized sales, service, training, and/or support source?
If so, please list up to three vendors (e.g. Apple, IBM, Novell, Hewlett Packard, Compaq) who ■■ authorized ■■■ ■■■■■ to provide these services ■■ ■■ ■■ ■■■ for which you're authorized.

Vendor	Sales	Service	Support	
1. _____	☐	☐	☐	☐
2. _____	☐	☐	☐	☐
3. _____	☐	☐	☐	☐

I certify that the statements made in this survey are true
Name: _____
Title: _____ Signature: _____
Date: _____

Texans Sue Spammer *continued from page 147*

don't realize how serious it is. We have a small group of people (hundreds, maybe a thousand) abusing key features of the Internet to the detriment of thousands of ISPs and millions of people. Nobody profits but the spammers. Lots of people lose. Spam won't stop until it becomes socially unacceptable to spam. We hope ■■ are helping to make that happen.

What Can You Do?

Well, the title of the previous article, "Spam Considered Harmful," is, as all good computer science students will recognize, a play on a famous article by Edsger Dijstra. "Goto

Considered Harmful."

I still fondly remember what he said when I offered him ■ UNIX account just after he took ■ faculty chair at the University of Texas. He did the same thing Donald Knuth of Stanford has done more recently. He refused to have an electronic mail address, so as not to get electronic junk mail. For those who don't recognize the names, these are two of the most eminent figures of all time in computer science, so one shouldn't take their opinions on this matter too lightly.

However, if your main occupation ■ not

mulling over deep issues for long periods of time, and instead you need ongoing contact with the outside world, shutting yourself off from electronic mail may not be an optimal solution for you.

If spam is as much a problem for you as it is for us, sue, if you can. If you don't believe it's a problem, or you don't know what technical fixes you can apply, read up on the subject. For example, see *http://www.mids.org/nospam/* and *http://spam.abuse.net* . Send us mail (spamsutt@zilker.net). Better still, write a letter to an editor, call a radio talk show, appear on television.

Or just don't agree the next time somebody tries to tell you spam is nothing but business. It's not business, it's abuse. Let's stop it. ■

> *If spam is as much a problem for you as it is for us, sue, if you can.*
> *If you don't believe it's a problem, or you don't know what technical fixes you can apply, read up on the subject.*

Telco Shell Game

Plus: CompuServe's Self-Reinvention; Antiques Hit The Road

Step right up folks!

Welcome to the Telecommunications Reform Act shell game! Place your bets and be a winner! Just watch the FCC and the Baby Bells and long-distance companies like AT&T deftly move the shells around the table. Just pick which shell holds the little ball. The little ball, of course, is real deregulation and protection from consumer ripoffs that you never are going to find, not in a million years. The shells are the government protected policy loopholes, back-scratching deals, and backroom abuse of customers.

See, we've got this thing called a telephone system. The public has paid for this system and its infrastructure many times over. What telco monopolies like PacBell (and AT&T before it) do is say, "Hmmm, what kind of ersatz service can I create where I can charge outrageous fees for adding very little to what already exists and was paid for by someone else, and still get the state and federal regulatory agencies to endorse it and get them to call it a monumental saving to the general public?"

Case in point: The Baby Bells were charging long-distance companies through the nose for "access" to the local lines and customers. Huge windfall from the regional Bell operating companies (RBOCs)—more than $23 billion annually, or half the cost of an average long-distance call. For nothing—just "access." The RBOCs probably spent no more to figure out how to hack a billing system for it than anything else. Pure profit. But the long-distance companies passed these access fees onto their customers, so don't sweat for AT&T.

Now AT&T and others have convinced the FCC that these outrageous access fees were, well, outrageous, so let's lower them and we'll

pass the savings along to our long-distance customers. So it's still a wash for AT&T, but now they'll give us the come-on that they've lowered their rates 5%. Meanwhile, the FCC lets the RBOCs replace the "lost" revenue from the lower access fees with something else—higher fees for additional phone lines. Let's say you've got 3-6 existing telephone lines for your home-based business. Zoom this: All of a sudden, for no apparent reason or added value, those lines that are already installed and paid for are now going to cost you $150 more per year.

Consumer long-distance rates might decrease a whopping 8%, so businesses can expect to see lower long-distance fees. But in the end they'll watch their telephone bills go up because the cost of multiple business lines could go up by $2.00 per line. Your local Internet Service Provider is probably at the neighborhood knife store browsing books on hara-kiri.

> Let's say you've got 3-6 existing telephone lines for your home-based business. Zoom this: *All of a sudden, for no apparent reason or added value, those lines that are already installed and paid for are now going to cost you $150 more per year.*

Don't forget the kids, either. The FCC deal also sets up a $3 billion annual account for hotwiring the nation's other great incredibly inefficient gubbermint-sponsored monopoly, the so-called non-discriminatory public schools. Supposedly residential lines are not priced at their true cost and are subsidized by about $1.50 each. The FCC decided that subsidy money should go to the schools. So instead of finding the money for this program by asking the RBOCs to run a tighter ship, they are going to gouge consumers instead. The money is supposed to pay for anywhere from 20-90% of a school's Internet phone bill, depending on how impoverished the facility is, based on the number of students enrolled in the school lunch program. Non-profit, rural health care centers will have a similar pool of $400 million.

In a brief snit of sanity, the FCC rejected an RBOC proposal that would have imposed a 1-3 cents-per-minute tariff to Internet providers like AOL for access to local telephone lines. In any event, these pricing mandates go far beyond the scope of the Telecommunications Reform Act. Who needs Congress or out-of-control judges when you've got the FCC?

Even so, what was Reed Hundt thinking when he traded lower long-distance access fees for AT&T for the Baby Bells' increasing fees for extra phone lines to subsidize schools? Maybe he was thinking about how the more things change the more they stay the same. Despite the hoopla of the Telecommunications Reform Act of 1996, it's still the same old government-sponsored monopoly mentality that continues to assume archaic and Byzantine telco pricing loopholes, customer-be-damned policies, and state-subsidized jobs programs disguised as school districts. If you find any real telecommunications

Online Services *continued*

reform out there, please be sure to report it to my online Web conference area at: *http://world view-bbs.com/TelcoConfs*

CompuServe Revs Up

CompuServe has revved up both its service and marketing. Not content to play second fiddle to any of America's online services, the company has reorganized itself and plans to spend the big bucks to keep customers and win new ones. Five million current subscribers isn't peanuts, after all.

First up ■ CompuServe's (CSi) reorganization of its online service into twenty-one distinct areas or "communities." If you haven't logged on for awhile the new areas are: News and Weather, Business, Professions, Research, Investing, Personal Finance, Computing Support, Computing Pro, Health, Education, Arts ■ Entertainment, Society and Living, Travel, Sports, Home and Recreation, Sports, Games, Sight and Sound, Internet, Communications Center, Shopping, and ■ Find/Search area, sort of ■ topical Lost and Found.

Within these communities CSi supports ■ 1,000 highly active online forums where members with similar interests share knowledge, experience, opinions, and advice through real time discussions, message postings, and through browsing the extensive file libraries available under each topic. Additionally, the Forums and other content within each community provide links to related World Wide Web sites.

This follows last fall's introduction of the CompuServe 3.0 client interface software which enabled pretty good integration of CSi and the Internet. The software enables users to link to Web content directly from the new community menus. Later this year, CSi plans to offer a new version of itself, ■ utilizing Internet standards. This will allow users to access the service via any Internet Service Provider (ISP) using any standard Web browser like Netscape Navigator. In this rev, each CSi community will become its own Web site, which the users can access using some password. It will also help CSi focus on the work of accommodating more and more users and presenting the service in a more compelling manner, rather than trying to stuff open Internet technology into its older proprietary architecture. The bet on the Web also allows CSi to market itself directly via the Web, opening up many new co-marketing opportunities with ISPs.

All of this comes after last year's corporate soul-searching in Columbus, concluding that business users were the company's main target customers. Everything flows from that, including some study marketing dollars skipping the mass market in favor of a 2.5 million piece mailing aimed at business, professional and technical users. Targeted advertising to sophisticated users will backup the promotions planned.

Ongoing member communication programs will work on member retention with tip sheets, email marketing ■ an online newsletter for advanced users. According to Scott Kaufman—

Online Services continued

practically reading from any text on Integrated Marketing Communications—"By understanding the specific criteria on which various segments of the market make their purchasing decisions, we anticipate that our marketing efforts will be much more successful than the mass consumer approach we tried in the past." Uh-huh.

This Ole Web site

Check out the Web site of PBS's "The Antique Roadshow" (http://www.pbs.org/wgbh/pages/roadshow/appraiseit.html) There you can find information concerning the show's broadcast

times for your area and information about the show "The Antique Roadshow" goes from town to town; its appraisers tell people who bring in their knickknacks that the trinket they've used for a doorstop for eight generations is worth $12 million. I'm always fascinated to see what people hang onto and think valuable.

One of the links on the site provides an alphabetical listing of the various appraisers the show uses including that person's specialty. Another link gives a brief description of the leading Auction Houses including Butterfield's, Christie's, Doyle, Skinner, and of course Sotheby's. Another treat on the site is a monthly

contest called Appraise It Yourself. This contest shows a painting or some other object, and then through a series of questions about the object you guess at several critical factors—date of the painting, what is the nature of the smudge, why ■■■ a pine frame, etc. If you get all of that right you get to make your own dollar appraisal from a multiple choice. Monthly winners get a valuable prize, usually some reference work on collecting.

"The Antique Roadshow" is rather mobile. It will be visiting the Bill Graham Civic Auditorium in San Francisco ■■■ Saturday, August 9th. The site explains how you can apply to have large items considered for evaluation by one of the experts, including two-way freight. Hand-carryable walk-ins are encouraged, but you're limited to two items per person.

I wonder how much of an antique they would consider the FCC? ■

Despite the hoopla of the Telecommunications Reform Act of 1996, it's still the same old government-sponsored monopoly mentality that continues to assume archaic and Byzantine telco pricing loopholes, customer-be-damned policies, and state-subsidized jobs programs disguised as school districts.

BY MICHELLE V RAFTER

Micropayments: Are They Finally Real?

Companies Polish New Offerings

Micropayments

haven't caught on as quickly as digital-cash vendors expected—but nobody's throwing in the towel Top players such as Digital Equipment, CyberCash and First Virtual are jumpstarting their respective efforts by signing far-reaching partnerships and boosting marketing programs to attract online merchants and ultimately, consumers.

Micropayments, or microtransactions as they're sometimes called, collectively describe digital payment methods that stand in for hard currency—coins and paper money—in online transactions, usually involving small-ticket items of a penny to $10.

Detractors say electronic financial transactions never fly—they claim people won't give up their paper money and plastic. But supporters believe the market for micropayments is enormous. Why? Think of all the things people buy in the physical world with cash—single issues of a newspaper or magazine, copies from a copy machine, postcards, movie tickets, CDs, and on and on. Now imagine how people would buy some of those same items online Credit cards are overkill for many low-priced goods or services, the value of the sale isn't worth the credit-card transaction fee a merchant would incur.

Enter micropayments The newest is from Digital Equipment, which unveiled the Millicent micropayment system at Spring Internet World in Los Angeles Millicent consists of three Internet-compatible parts virtual wallet software consumers use to buy online content worth a high as a cent, as $5 merchant server software for accepting payments, and broker server software for handling the transactions With Millicent, a consumer uses a credit card to debits their checking account to pay a bank or other broker for scrip they can exchange online

for information, services or subscriptions from Millicent-enabled merchants Merchants collect the scrip and forward it to the brokers, who reimburse them via standard electronic funds transfers or printed checks.

Using CyberCash's CyberCoin product, consumers can buy digital currency in $20 increments with funds from a checking account or credit card, store it in a CyberCash virtual-wallet software program on their hard drive and use it online to pay for newspaper articles, games, digital and other goods and services.

First Virtual Holdings' payment system lets shoppers purchase one or many small items using a Virtual PIN—an identification number that stands in for a credit-card number—and confirm purchases via email.

A fourth option comes from Dutch-based DigiCash, whose US licensee is Mark Twain Bank in St. Louis. Consumers open a special world-currency checking account at Mark Twain, buy DigiCash's Ecash currency, store it at the bank or on their hard drive and use it to buy and sell goods and services.

How It Works, Who It's For

As with credit-card purchases merchants pay a small transaction fee for micropayments, though the amount varies with

the vendor First Virtual, for example, charges 2% of the transaction cost plus 29 cents. CyberCoin transactions operate on a sliding scale.

Digital wants to put banks in the driver's seat of its three-part payment solution, which the company is testing internally before launching a public trial in the summer "Good (Millicent) brokers are organizations that are recognized by consumers and have a high degree of trust" such as banks, says Russ Jones, a Digital manager involved in the project.

Digital is purposely leaving many details of how the system will be implemented up to its broker partners, which in addition to banks could include Internet Service Providers, national online services, and outside the US, government-sanctioned telephone and postal agencies, Jones explains Those details include how a consumer pays for scrip minimum purchase amounts, minimum per-transaction fees brokers will charge merchants and how often brokers will reimburse merchants for scrip they turn in

Digital expects to make its money selling broker and merchant software Digital has already partnered with Bank of Ireland and Tele Denmark to act as brokers for the payment system during a private test this spring among 45,000 Web-enabled Digital employees The company

> **THINK OF ALL THE THINGS PEOPLE BUY IN THE PHYSICAL WORLD WITH CASH—SINGLE ISSUES OF A NEWSPAPER OR MAGAZINE, COPIES FROM A COPY MACHINE, POSTCARDS, MOVIE TICKETS, CDS, AND ON AND ON. NOW IMAGINE HOW PEOPLE WOULD BUY SOME OF THOSE SAME ITEMS ONLINE.**

Micropayments

expects ▪ announce other US banking partners before the public beta begins ▪ summer

On the merchant side, Digital believes Millicent will be attractive to online publishers interested in selling information by the article, and to software publishers looking to sell Java applets and other software on a per-use basis ▪ NC users. Already, Reuters and InfoSeek have signed on as content providers for the tests.

Slow Start, Big Plans

For vendors who've offered microtransactions longer, the going has been slow. Since CyberCoin's September 1996 launch, only thirty online merchants have integrated the payment method into their Web stores, another forty are still in the planning stage. In late March, CyberCash confirmed ESPN SportsZone and Playboy Enterprises would incorporate CyberCoin payments on their respective Web sites for premium services and pay-per-view events.

One early CyberCoin merchant was Virtual Vegas, a Santa Monica gaming site that offers it as a payment option for buying ▪une software and sports betting tips. "We've done a few thousand dollars worth of sales at 25–50 cents a pop. It's kind of a trickle, but we haven't been marketing it either. It's a chicken and egg situation," says David Herschman, Virtual Vegas president.

France Telecom's Questel-Orbit division in Vienna, VA tested CyberCoin for four months

and expected to begin offering it by the end of March ▪▪ a payment option for searches of ▪ database of 1.8 million US patent application. "The holdup has been on our part. finaliz▪ our business model of how we'll charge for ▪ content," according to Paul Albert, a Quest▪ Orbit consultant.

More than a million people have download▪ CyberCash wallets, but to date, only 5,000 ha▪ used them for CyberCoin transactions. To bo▪ that figure, CyberCash ran a $10,000 sweep stakes from October through January. In diff▪ ent promotion, First Union Corp., the country #6 retail bank, is offering a c▪ branded CyberCash wallet ▪▪ its Web site, and built a min▪ mall of CyberCoin merchan▪ on the site to get consume▪ attention.

In another marketi▪ effort, CyberCash plans ▪ open a CyberCoin-based

> SOME INTERNET COMMERCE WATCHERS BELIEVE MICROTRANSACTIONS WON'T BECOME UBIQUITOUS UNTIL SOFTWARE IS INCLUDED IN WEB BROWSERS, A DEVELOPMENT BOTH MICROSOFT AND NETSCAPE ARE REPORTED TO BE WORKING TOWARD.

Micropayments *continued*

.:aringhouse for publishers, called Digital :..wsstand, that will sell single-day subscrip- :.ns to the *Los Angeles Times*, Quote.com, ::.omberg, *American Banker* and other pub- .cations. The service, which will be promoted .n Yahoo!, Lycos and InfoSeek, requires that merchants insert a 100-line CGI script into their site that enables them to accept CyberCoin payments. Sales will be split between the merchant, CyberCash and pro- ::.oters. "It's designed for merchants who are :ull struggling with their business plan for microtransactions," says CyberCoin Product Manager Larry Gilbert.

Fresh from an initial public offering that raised $18 million, First Virtual is pouring resources into marketing its Virtual PIN, which currently is offered by more than 3,000 mainly small mer- chants and used by approximately 200,000 con- sumers who each pay $2 to register. First Virtual recently hired marketer Harte-Hanks Direct to conduct online and offline direct mail campaigns and create a buyers club that would give away merchandise and subscriptions to people who use the payment service.

In another marketing move, First USA Paymentech, a major credit-card processor and

ON THE MERCHANT SIDE, DIGITAL BELIEVES MILLICENT WILL BE ATTRACTIVE TO ONLINE PUBLISHERS INTERESTED IN SELLING INFORMATION BY THE ARTICLE, AND TO SOFTWARE PUBLISHERS LOOKING TO SELL JAVA APPLETS AND OTHER SOFTWARE ON A PER-USE BASIS TO NC USERS. ALREADY, REUTERS AND INFOSEEK HAVE SIGNED ON AS CONTENT PROVIDERS FOR THE TESTS.

First Virtual investor, is promoting the Virtual PIN in a consumer newsletter it publishes and has hired marketer Donnelly Direct to help reach its goal of signing up one million Virtual PIN holders by May 31.

"We've been hammering on the technology side of our business and how we're getting ready to launch as a marketing company. We're ready to take off," says Pierre Wolf, First Virtual marketing director.

First Virtual also has high hopes for a deal with Microsoft, which is embedding Virtual PIN technology in Merchant Server Web com- merce software expected to be released in spring.

Despite their efforts, some Internet com- merce watchers believe microtransactions won't become ubiquitous until software is included in Web browsers, a development both Microsoft and Netscape are reported to be working toward. Others believe microtransac- tions will hit it big only when they're included in smart cards that people plug into a card reader attached to their home PC, load up with cash and use anywhere. ■

RESOURCES:

CyberCash
URL: http://www.cybercash.com

DigiCash
URL: http://www.digicash.com

Digital Equipment's Millicent program
URL: http://www.millicent.digital.com

First Union Corp.
URL: http://www.firstunion.com

First Virtual
URL: http://www.fv.com

Mark Twain Bank
URL: http://www.marktwain.com

Questel-Orbit
URL: http://questel.cybercash.com

Virtual Vegas
URL: http://www.virtualvegas.com

Web Page Listings

COMPUTER PRODUCTS & SERVICES

Abacus Computers http://www.computers-online.com Full service solutions provider. Authorized distributor of Cisco, Novell, Ascend, 3COM, U.S. Robotics, PacBell, and others. [Exp #168.]

Adlen Computing Consultants http://linex.com/~aldfn/ PC tutoring and consultation, Web page creation, 3-D animated graphics. Based in Berkeley, CA. [Exp #166.]

Axis Systems http://axissys.com Web site offering useful product information and specs. [Exp #168.]

Cadd/Engineering Supply http://www.cesplot.com/ With over nine years of experience in supporting the CAD market, ■■ have built ■ reputation for exceptional pricing and outstanding customer service. ■■■ [Exp #168.]

■■■ Design http://www.cddesign.com/ I Ching PC software for Win3x/95. Download free demos. [Exp #167.]

Centura Software Corp. http://www.centurasoft ■■■ Centura Software (Formerly Gupta Corp.), ■■■■ products ■■ as ForeSite for developing ■■ deploying high-performance Web-based ■■■ client/server applications. [Exp #168.]

Complete Computer ■■■■ons http://www.cscorp ■■■■ Area Networks ■■■■, ■■■■ downsizing, Web ■■ creation, system upgrading. [Exp #167.]

Dadaware http://www.dadaware ■■■ Features

Embellish, image editing software. [Exp #167.]

Dad's Computers http://members.aol.com/p2bittn/index.html Custom build, repair, and upgrade computers. Offering Internet research and ■■■ support. [Exp #167.]

Free Flight http://www.free-flt.com Free Flight, a moving map application with 3-D terrain, makes aeronautical navigating easy. [Exp #168.]

HiTek Solutions, Computer Education Centers http://www.hiteksolution/ Novell ■■■ Microsoft certification training providers. (714) 474-8270 [Exp #168.]

Magictek Computers, Inc. http://magictek.com Complete computer services, custom design, online sales, pricing—your one stop shop. [Exp #168.]

Match Fonts Mac II Windows http://www.match fonts.com Great original fonts, foreign language fonts, and tools for DTP, artwork, and word processing. Free samples [Exp #167.]

MegaMemory http://www.megamemory Computer memory for PCs, Macs, Powerbooks, Thinkpads, Newtons ■■■ EDO memory ■■■ lifetime warranty, free 2nd-day shipping. [Exp #167.]

Moniserv, Inc. http://www.moniserv.com ■■■ Mac/PC ■■■■ for ■■■ Sony 17" $249 (MAC) 19" $499 (PC/MAC) Six-■■■ warranty. [Exp #166.]

PagersOnline http://www.pagersonline.com Pagers, numeric and alphanumeric service.

Local, regional, and national coverage. Rent or buy. [Exp #167.]

http://www.corpwatch.org

http://www.florencemm.com

http://www.cafeshop@istanbulexpress.com

PC Express http://www.happysite.com Online PC sales, art gallery, music,

Web site design and ■■■phics. [Exp #166.]

S.S. International Web Page http://www.ssinternational.com Software developers for the world. [Exp #168.]

T22 Systems http://www.t22.com Complete PC systems, custom system and network integration, as well as PC upgrade, repair, and on-site services. [Exp #166.]

Tower Hill Development http://www.towerhill.com Control information overload. Download Knowledge Vision for free to help you manage your data. [Exp #166.]

TradewinJ International http://www.sfadnel.com/ Your source for computer parts and custom configurations for PCs. [Exp #168.]

UNIX Power For PCs. http://www.suse.com Learn about the German Linux distribution (UNIX for PCs), SuSE Linux [Exp #167.]

WordPerfect Headquarters http://www.wp.com/ MacroExpert WordPerfect tips, articles, library. Law office support, training, productivity planning, and more. [Exp #167.]

WEB/INTERNET SERVICES

A-Net http://www.abac.com Southern California's total Internet solution. Connect ■■■ plans from $3.33/mo. Business services and merchant servers. [Exp #168.]

Alpine Solutions http://www.aplines.com Alpine Solutions GeoFind service provides Internet-based business locator capabilities to business. [Exp #168.]

Brad Sadler's Web Design http://www.amer ■■■■ /mplayer Offering ■■■■■, Web des g ■ and years of marketing experience. 25% discount for ■■■ profits [Exp #168.]

Connecting Business To The Future http://www.nectx.com Internet of ■■■ intranet business solutions [Exp #168.]

Crash Course On The Internet http://www.gimix mail.com/crashcourse A live ■■■ v-deo training ■■■■■ instructed by NASA Internet Specialist Brian Kowal [Exp #166.]

Dana Point Communications—BeachNet http://www.beach.net A complete network systems integrator providing ■■■ service, internet and intranet solutions for business [Exp #166.]

OEK Productions http://home.earthlink.net/~oek/doc/dek.htm Web page design and LA vocal video services with full digital capabilities [Exp #168.]

The Drink Exchange http://www.drinkexchange.com Drink Exchange's mission is to help Web professionals promote themselves by listening an off-line community where ■■■ provide is roughly proportional to what we imbibe [Exp #168.]

Elsop Webmaster Reference Center http://www.elsop.com/wrc Web site for Webmasters that contains the best ■■■ and most comprehensive coverage of computer industry publications, ■■■ Site development, ■■■ HTML servers, software ■■■ Webmasters, and more [Exp #167.]

Equilio Web Design http://www.equilio.com Web page design packages for starters ($300) designers ($600) and professionals ($1,000 and up) [Exp #168]

First Light Internet Services http://www.first light.net Unlimited PPP accounts $19.15/mo

[Exp #168]

Freedomstarr Communications, Inc. http://www.freedomstarr.com/?vi533 415 free Web page for serious entrepreneurs or Internet business starters Customizable or automatically maintained [Exp #168]

Global Web Marketing, Ltd. http://www.gwm.co.uk Internet design, design franchises, fax broadcast, email marketing (UK) [Exp #168]

Hyper Design Services http://www.hyperds.com Bay Area Web site design Providing economical packaged services for business [Exp #167]

InternetConnect http://www.internetconnect.net Full service Web site hosting and development Complete corporate Internet access solutions [Exp #168]

Internet-Frontier http://internet-frontier.net Full Service Internet Internet Access Provider Low prices, reliable services, local access. [Exp #168]

Ironlight Digital http://www.ironlight.com Providing the marketing, design, network services necessary to establish a innovative and lucrative Internet intranet presence [Exp #166]

JPNW http://www.jpnw.com Webmasters What Wonderous Webs We Weave Specializing in putting small- to medium-sized companies on the Internet at the lowest possible price. [Exp #168]

MARINTERNET http://www.marininternet.com Internet for Marin residents. Locally owned and operated. Online users 90 days free for switching $19.95 [Exp #168]

Maztek Consulting http://members.aol.com/maztek/index.html Provides services for the Internet user community [Exp #167]

mmm-MultiMedia Company http://www.mmm MultiMedia.com Specialists in Web site development and entertainment [Exp #168]

NetCiti http://www.NetCiti.com NetCiti can design and market your Web site(s) on the Internet [Exp #166]

Outla Site Web Design http://www.dnack.com/outla_site Creative Web page design and consultation Large graphics and animation library Great prices [Exp #168]

P-Net http://www.p-net.com/ P-Net offers complete design, service, support for your Web pages, including HTML coding, CGI scripting, and scanning [Exp #168]

Pacific Business Systems http://www.pbs1.com Internet access and Web page housing First month free. (714)452-9110 [Exp #168]

Phobe.com http://www.phobe.com Web development services, graphic design, service, 'zines, rampant silliness, strange scientific experiments, and more [Exp #164]

Red Shift Internet http://www.redshift.com Local calls to San Jose, Santa Clara, Cupertino, Sunnyvale, Min View, and more Unlimited access $16.95/mo [Exp #168]

SamGel's Web Design http://members.aol.com/SamGel Offering Active X and Java animation for exciting non-static Web design. Custom graphics are well-designed and [Exp #166]

San Francisco Ad Net http://www.sfadnet.com Professional Web page design and domain name starting at $30 Get a free classifieds [Exp #166]

San Jose Web http://sanjoseweb.com Web hosting solutions for of Microsoft Front-Page [Exp #168]

SISNA San Jose http://www.sisna.com/sanjose Unlimited access as low as $17/mo Special student rates as low as $12/mo [Exp #168]

Taiwan Universal Commerce Information Center http://www.commerce.com.tw Taiwan's largest commerce Web server specializing in trade, industry, business, manufacture, as well as import/export information [Exp #168]

TLC Net Server http://www.tlcs.com Full Internet access, custom-designed interactive servers for your business or home Free interactive software [Exp #166]

Watson World Wide Enterprises http://w3ent.com Web page design, hosting, Internet commerce, marketing, and IMALL advertising [Exp #168]

Web Design & Hosting http://www.webbnet.com/ Exciting Web page design, development, storage, full PPP accounts, data base integration, credit card verification, email/fax gateway [Exp #167]

Web House http://www.masterm.com/webhouse.html Affordable Web hosting, design, and promotion [Exp #168]

Weblink http://www.weblink.com Offers friendly and professional design services and standard server [Exp #168]

Wicked Styles Website Design http://www.wicked-styles.com/design/ Low-cost, professional looking Web page design for personal and business Quick turnaround affordable rates [Exp #166]

WOLNET http://wolnet.com Complete Internet Service Providers [Exp #168]

Wonderwidgets http://www.wwi.com Full service

SG based in Redwood Beach serving the South Bay Area We do everything two-and-way experience [Exp #166]

A & Associates http://beaumont.net Discount lived price Web site hosting We have the best service and pricing on the net [Exp #168]

SERVICES & PRODUCTS FOR SALE

1 Outstanding Business Opportunity http://users.aol.com/whnk100/as.htm [Exp #168]

ABC Storybooks http://w3.net/abcstorybooks.htm Personalized story books, as well as Barney, McGruff, Precious Moments, and Presto Sticker books Disney titles and more [Exp #168]

An Entrepreneur Opportunity http://www.aable.com/ihi/isr/ca/johnl Serious income product work-at-home. Serious compensation and benefit structure. [Exp #168]

Annezi BBS http://www.annex.com Our famous and Web services in a friendly online community [Exp #168]

Multicam Systems Australasia http://multicam.com.au Australian designed and manufactured Multicam router, routing tables and machines [Exp #168]

BioMedrix http://www.biomedinx.com Develops and manufactures implants and instruments that address Canine Dysplasia [Exp #167]

Black Hills Virtual Mall http://www.mall.black.hills.com Black hills businesses online [Exp #168]

The Booksmith http://www.booksmith.com San Francisco independent bookstore—computer books, fiction, sci-fi, erotica cookbooks, and books [Exp #168]

Web Page Listings continued

The Car Lot http://www.webms.net/cars/ Buy or used cars on the Internet. Free service includes color photo with ad [Exp #168]

Carels-Wang International http://netcentermail.com/scan Have any positive print, photo, or brochure scanned to JPG, GIF, transparent GIF and emailed back [Exp #167]

Club Export http://www.club-export.com The best export shop for French fashion, accessories, furniture, jewelry, cooking utensils, tourism, and health products [Exp #168]

Collect On Judgements http://www.sbcr.com/judical.html Judicious judgement collection You don't get paid, we don't get [Exp #167]

Commercial-directory.com http://commercial-directory.com/free-ads Place free classified ads in hundreds of newspapers worldwide [Exp #166]

Cybermation http://www.cybermationsys.com SCK-2000 Motion Control System for robotics, lasers, industrial control [Exp #167]

Discreet Medical, Inc. http://www.discreelmedical.com Provider of discreet healthcare products including HIV tests, hair-loss treatment and stop-smoking kits [Exp #168]

Voyles Subaru-Hyundai http://evsubaru-hyundai Hyundai is to a part in a 50-year in the Atlanta [Exp #168]

Fingerprint Verification System http://www.com/fpg97/fpg97.html Learn FPG97, a timecard system fingerprint technology [Exp #167]

For All Your Graphic Needs http://www.concen tnc.net/~robb6093 [Exp #168]

Fortney Associates, Inc. http://www.fortneyca.com Obtain governmental approval of your development project in a timely, cost-effective manner [Exp #168]

Fund Raising And More http://www.angelfire.com/biz/Fundraising/index.html We are offering a wonderful fund raising item in the form of grocery coupon certificates [Exp #168]

Galaxy TeleCards http://wwwn.netcom.com/~rdro dng information regarding free $0.19/minute rechargeable phone cards and home-based business distributorship opportunities [Exp #167]

Gallucci's Italian Foods http://www.tastetaly.com Importer of fine Italian gourmet and Hungarian foods and wines since 1912 [Exp #168]

Geofax http://geofax.net Allows people to get their voice-mail and fax messages over Internet listen to their messages, faxes, and email over the phone [Exp #168]

Gift Basket Place http://www.giftbasketplace.com Winnie Lorrie are bringing county values to electronic markets [Exp #168]

Golf Collectibles http://www.golfcollectibles.com Unusual gifts for golfers Golf antiques photos videos Scottish golf art [Exp #168]

Grey's Funeral Home http://www.angelfire.com/ky/grey Complete funeral Tipperary, Ireland [Exp #168]

Hand-Twisted Hammocks From Guatemala http://www.creative.net/~199 High-quality, durable, 100% cotton hammocks

Get one today and relax all summer long [Exp #168]

HT Electronics, Inc. http://www.hte-inc.com Digital video/audio, video production [Exp #166]

Istanbul Express http://www.cofishop@stanbulex press.com Berkeley-based gourmet coffee, tea, chocolate fudge and truffles at competitive prices [Exp #168]

Italmarket http://italmar ket.com The finest Italian products, services, and information [Exp #168]

Jar's Secret http://www.fred.net/congo/secret.html Simple the best Bar-B-Q sauce. Money-back guarantee [Exp #168]

Jel Enterprises http://home.earthlink.net/~lady jel Corporate and personal services. Organize events, seminars, parties, reunions, travel. Project sitting Procurement. Compile data. [Exp #167]

KMB Enterprises http://www.kmb-enterprises.com Reseller of computer, CB, Ham equipment, electronic parts, and more Online ordering [Exp #168]

KNOWCORP Restructuring http://www.know corp.com The solution for information overload [Exp #168]

Lavender Pages http://www.lavenderpages.com/ The largest gay shopping mecca on the Internet—Shop the Castro from comfort of your keyboards [Exp #168]

Lighthouse Professional Group http://www.lhpg Small business consultants' page offering computers and property management [Exp #167]

Logistica Consulting Group, Inc http://www.lcgrp Atlanta-based management consulting [Exp #168]

Madely's Collectables & Things http://members.

aol.com/madelys/index.htm Porcelain dolls and resin figurines [Exp #168]

Mansoor's Imports http://www.amarna.com/sir/imports/html.htm Edgard and Maj-Gun Mansoor's antique store in San Juan Capistrano, CA [Exp #166]

Opamp Labs, Inc. http://www.opamplabs.com Mfg of amplifiers, multimedia press-boxes, audio transformers, and industrial electronics [Exp #166]

PCB-Quote, Inc. http://pcb-quote.com Free multiple quote for PCB layout, fabrication, assembly. Over 250 PCB vendors to choose from [Exp #168]

Porta Gas, Inc. http://www.portagas.com Calibration gases and equipment for air monitoring equipment [Exp #168]

Posie Peddler Florist http://home.earthlink.net/~samson/posie.htm Specialty roses, fruit and gourmet baskets, balloons, tropicals, exotics, worldwide delivery Charge by phone. [Exp #167]

R.L. Schreiber OnLine http://www.RLSchreiber.com A family-owned and operated company since 1968 providing high quality food bases, spices, and retail products [Exp #168]

RBF Enterprises http://www.rblenterprises.com We sell discount cigar humidors. Visit our site for more information [Exp #168]

Saudi Arabian Development Company http://sadco.com Sales and services of industrial equipment, engineering and construction consultancy and information technology group Covering all of Saudi Arabia [Exp #168]

Seiko Ltd Co. http://www.seikopools.com One of

oldest and most respected builders in Southern California [Exp #167]

Shotokan Karate America, Garden Grove, CA. http://snwinc.com/2003/garden.htm Events, National Dojo directory, class schedule. Info about the history of Shotokan Karate of America [Exp #168]

SOSS Invisible Hinge http://www.hinge.com Provides the entire SOSS Invisible Hinges catalog [Exp #168]

The Sound Wave http://www.thesoundwave.com Creators of original music and voiceovers for Web sites and multimedia media [Exp #166]

SuperMarkets Online http://www.supermarkets.com A cooperative site for supermarkets and packaged good manufacturers bringing coupons, recipes, and more. [Exp #166]

TaCllo Direct Marketing http://www.tacito.com Direct mail advertising [Exp #168]

Team Simpson http://www.simpsonraceprod ucts.com America's leading manufacturer of motorsports products for teams, and fans [Exp #168]

Thog, Inc & Associates. http://www.thog.com [Exp #168]

Toy Time http://www.toy time.com Toy Time, an online specialty toy store, lets kids register for exactly what they for their birthday [Exp #167]

USSA, Inc. http://www.carpass.com/ussa Network marketing, home and small businesses, travel, and health [Exp #168]

Ventura Design On Time, SA. http://ventura.ch A different breed of watches [Exp #168]

The Very Best Sticker Company http://members.aol.com/otcbab/tvb/tvb.

htm Catalog company featuring stickers for various all ages [Exp #167]

Vimich Traffic Logistics http://www.vimich.com Contract traffic logistics management [Exp #168]

FINANCIAL/REAL ESTATE SERVICES

George E. Thomas Real Estate Advisory http://www.pspink.net/~gthomas Provides advisory services to owners, lenders, and buyers of commercial real estate in California [Exp #168]

Real Estate Service Review http://www.re review.com Real Estate Service Review is a real estate and relocation service designed for consumers, agents, and buyers An agent should be a choice, not a chance [Exp #169]

LEGAL SERVICES

California Anti-SLAPP Project http://www.sirius.com/~casp Provides information on strategic lawsuits against public participation and California's anti-SLAPP law [Exp #168]

Database Solutions, Inc. http://members.aol.com/formfiler/homepage.htm Developers of PhotoTracker Pro and Do-It-Yourself Divorce software [Exp #168]

Law Offices of John R Kahn http://members.aol.com/~jkahn/index.html Attorney handling Computer Bankruptcy, and Real Estate law in transactional matters in San Jose, CA [Exp #167]

Legal Survival Web Site http://www.irtran.com Robert Friedman of Friedman & Rannow presents an easy to understand lay terms for consumers and small business owners [Exp #167]

Online Guide

Web Page Listings continued

Richard J. Greenstone, Attorney at Law http://www.rjg.com/rjg Copyright, trademark, licensing, business, and transactional law for the computer, entertainment, and publishing Industries [Exp #166.]

Silicon Valley Legal Net http://www.pagedepot.com/siliconvalleylegalnet Interactive legal and business Web site. [Exp #168.]

EMPLOYMENT/EDUCATION

Adgrafix http://www.adgrafix.com/info/aprice/sales.html Account executives needed. High commissions and an investment [Exp #167.]

Avant-Garde Executive Recruiters http://www.avgard.com Executive and senior engineering search and placement firm [Exp #168.]

Crash Course On The Internet http://www.choicemall.com/crashcourse A live hour video training series by NASA Internet specialist Brian Kowal [Exp #168.]

The Desktop Writing Workshop http://www.writingshop.com Interactive multimedia fiction writing tutorials on CD-ROM. Award-winning author/teacher Tom Parker plus e-Critiques. [Exp #167.]

Extreme Training Methods http://www.nwinc.com/2003/exim.htm Increase your mind-body skill levels by 400%. Break through mental, physical plateaus and blocks [Exp #168.]

Hart Crowser Online Institute http://www.supportonline.com Provides computer-mediated, instructor-moderated, learning to support the training and education to today's workforce [Exp #168.]

Human Resource Network http://www.hr-network.com/ IT contract recruitment services [Exp #168.]

Implant Dentistry Communications http://www.implantdentistry.com Offers patient education about the surgical and prosthetic phases of this treatment [Exp #166.]

The Learning Annex http://www.thelearningannex.com Interactive seminars, online store, student cafe/forum, listing of live seminars, and future celebrity seminars and chat [Exp #167.]

Pacific College of English http://pacificcollege.edu.au [Exp #168.]

Raising Capital Seminar http://www.altasnet.com/ World's best online seminar on raising capital [Exp #167.]

Zephyr Business Services http://members.aol.com/zephyrbus/web/ Computer software training specializing in speech recognition software and custom training Sales and support of major speech recognition platforms [Exp #168.]

ORGANIZATIONS

Association To Benefit Children http://www.a-b-c.org Founded in 1986 to fight against the numerous threats children face every day: poverty, homelessness, drug addiction, and HIV. [Exp #168.]

Bright Futures Project http://www.brightfutures.org Bright Futures mission is to promote and improve the health and education of children, families, and communities [Exp #168.]

The Center For Group Learning http://www.cgl.org/ Learn about theories and practices regarding (people) group dynamics, conferences, links, online materials, etc [Exp #167.]

CHECNet http://checnet.org The communication hub for individu-

als, organizations, seminars, lists, and policy-makers interested in children's environmental health [Exp #168.]

European Train Enthusiasts http://www.ete.org Railroads of Europe, including modeling train video and photography, collecting, swapping, and modular railroading. [Exp #167.]

Future Media http://www.futuremedia.org News, reviews, and attitudes on new media [Exp #167.]

Get Involved Online http://www.stc-inc.org AIDS awareness and prevention site sponsored by Students That Care, Inc. [Exp #168.]

LA AutoCAD User Group http://www.lacad.org Supporting the Autodesk family of software Lisp programs, calendar of events, membership/meeting information, articles, and technical papers [Exp #168.]

National Center For Employee Ownership http://www.nceo.org/ Readings, columns, discussions, and interactive training on employee stock ownership plans, stock options, etc. [Exp #167.]

National Trust For Historic Preservation http://www.nationaltrust.org News fresh from preservation's front lines, reports from the 1996 updates on legislation links and a discussion forum on preservation topics of the day [Exp #167.]

Northern California Power Agency Home Page http://www.ncpa.com Electric power provider located in Northern California [Exp #168.]

Orange County NetWare Users Group http://www.computerocoug.com/ocnug Web site that lists meeting topics, dates, and membership info [Exp #168]

Web Page Listings continued

San Francisco PC User Group http://www.sfpcug.org/ Open to all persons interested in solutions to problems related to the ■■■ of Intel x86 and compatible computers [Exp. #167.]

San Gabriel Valley Chiropractic Society http://home.earthlink.net/~bac doc/gives him A Southern California branch of the California Chiropractic Association, with information and email addresses of the members. [Exp #168]

Santa Clarita Valley's PC Group http://www.smartlink.net/~scvpcg The Santa Clarita Valley's PC Group dedicated to PC literacy. Come join us. [Exp. #167.]

Sapient Health Network (SHN) http://www.shn.net An interactive health information service developed for people with chronic and serious illnesses. [Exp #168]

Share International http://www.shareintl.org

Shows the synthesis underlying the political, social, economic, and spiritual changes now occuring worldwide [Exp #166.]

Software Forum http://www.softwareforum.org Building success for professionals [Exp #168.]

Veterans Memorial Senior Center http://members.aol.com/VMSC CompEd Redwood City Senior Center featuring its activities including computer education. Also links to significant sites. [Exp. #166.]

WCG-North Bay Churches http://pages.prodigy.com/ YJCN61A/winewood.htm Worldwide Church of God north of the Gate. Bilingual Web site, English and Spanish [Exp #167.]

PUBLICATIONS

111 Xcentrix Zine http://www.best.com/~xcentrix On the Web since 1995 Art, fashion, gossip, film, books, and music [Exp #168.]

El Grupo [Ea] http://www.grupoea.org El Grupo, [Ea], es un canal de información que viene a develar los secretos que están sellados herméticamente en el Libro de la Vida, para estos días en que se cumple la profecia del fin-de-los-tiempos [Exp #168.]

The Free Web Page Provider Review http://www.leland.stanford edu/~maxlee/FWPReview/ [Exp. #166.]

Global Production Network http://www.gpn.net An international directory of resources for the film industry [Exp #168.]

MassageMall http://www.MassageMall.com A directory of massage therapists [Exp #168.]

Microwave News http://www.microwavenews.com A report on non-ionizing radiation [Exp #168.]

OPAMP Technical Books http://www.opampbooks.com Computers, engineering, business, trades,

20.000+ titles (■■■ 5% discount [Exp #168.]

Puerto Rico Online Magazine http://www.prmag.com Your entertainment guide for Puerto Rico. [Exp #168.]

Virtual Vegetarian http://www.vegetariantimes.com Developed by the editors of _Vegetarian Times_ The site features recipes, advice on health and diet issues. ■■ sources upcoming events and more. [Exp #167.]

writers.net http://■■■ primapublishing.com/■■ 7615064.1.html Comprehensive guide to 750+ online resources as well as opportunities for writers and readers. [Exp #168.]

ODDS ■ ENDS

AirCal http://members aol.com/aircal1737/reunion.htm Information about the upcoming AirCal reunion, a great airline once based in Orange County. [Exp #166.]

List Your Web Page

To list your Web home page for FREE, send us the name of your page/site, the URL (address), and a fifteen-word description. Also, please include a contact name and phone number for our reference only. Listings will run for three issues unless renewed. Listings will run for space-available basis and to edit those listings as needed. Send us your listings to: michael.robin@microtimes.com ; Web Listings, 3470 Buskirk Ave, Pleasant Hill, CA 94523; or fax to (510)934-0883.

For information about placing a mini-display paid advertisement within the Web Listings section, please contact:

In Northern California:
Karen Schweickart (510)934-3700

In Southern California:
Michelle Rosendin (213)851-8600

Web Page Listings *continued from page 176*

Awareness Holistic Books ■ Information Center http://www.net wizards.net/~awareness ■ meeting place for creative evolution of body, mind, and spirit in San Mateo [Exp./#168.]

8737 Club http://home worldonline.nl/~pvheyst Information about 8737 destinations for KLM cockpit- and cabin-crew. Also information about the EF2000 simulation. [Exp. #168.]

Belgian Dental Site http://www.belgiandental site.com This is the first Belgian dental site for dentists, dental labs and patients. [Exp. #168.]

Claris Small Business Web Site http://www. claris.com/smallbiz Features ■ valuable collection ■ information, services, software templates, demos, and other resources to meet the needs of small business owners. [Exp. #167.]

Egypt Interactive http://www.amarna.com/eir A listing of Egyptology, archaeology, and museum-related Web sites. [Exp #166.]

F12 Online Anonymous Twelve Step Program http://www.apc.net/ia/ index.htm Webaholics, netaholics, modemheads, interholics, and newsgroupies are welcome. Sabrical ■■■■■■ located ■■■■■ working ■■ 12 keys. [Exp #167.]

Healthcare Forums http://www.healthcare forums.com Web-based community allows ■ interaction among doctors, nurses, ■■■■ professionals ■■ industry vendors [Exp #168.]

New Ways to Hawaii http://www.icafe.com/mways/hazward [Exp #168.]

Romance Club Online http://www.romanceclub com The ■■■■■■■ ■ to meet fine quality and attractive singles. [Exp. #168.]

Sunshine International Penpals http://sunshine-girls.com/ Asian women desire romance, marriage. World's largest correspondence service since 1984. Free photo brochure. [Exp /#168.]

The Lowlife Legion http://www.concentric.net/~lmnl/ A group of hackers and Phreaks. [Exp /#166.]

Vacuum Tube Valley http://www.vacuumtube com Info on tube audio, guitar amps, tube computers. Also featuring classified ads and articles ■ VTV. [Exp. #167.]

Washington Economics Intelligence Brief http://www.weg.com An incisive weekly assessment of US economic developments and Washington policy for corporate decision makers and investors [Exp #167.]

World Wide PenPal Service http://www Find you pen pal [e-pal] world wide. Post your pen pal ad free. [Exp #166.]

Yoga ■ Menopause http://www HotflashYoga ■■■ Philosophy of Nevine Michigan and Katonah Yoga, designed to relieve symptoms of menopause. ■■ seen ■ CBS TV. ■ English and Spanish [Exp #168.]

Your Free Clairvoyance http://www.sara-freder com/index_an.html Whatever the problem might be that is ruining your life, you have absolutely nothing ■ pay neither before nor after your free clairvoyance ■■ consultation [Exp #168.]

PERSONAL HOME PAGES

AnthonyD's World And Scanner Service http:// users.aimnet.com/~tony dd/htmlpage/welcome ■■■ Learn ■■■■■ ■■■ Web ■■ ■■■ my ■■■ service, law on ■■ Net, free icons. [Exp. #167.]

Paul Chow Homepage http://www.rics.com/paul/ ■■ story about Paul Chow, Chinese-American

Beedon's Better Bookmarks http://www.net com.com/~beedon/and cars.html A huge selection of bookmarks and links covering topics such as computers, sports, business, etc. [Exp. #168.]

Bruce Kremer Home Page http://wwwbcf use.edu/~bkremer Drawings and travel journal entries. Art from sketchbooks and diaries, originals suitable for exhibition or publishing. [Exp #167.]

Colleg In Moscow http://old.relis.ru.80/datum/R Line/mr021000.htm [Exp #168.]

Elmer Bergman, CPA http://members.aol.com/ BergmanE Interesting accounting, tax, investment, computer, travel, search engine, address, government, and misc links. [Exp. #166.]

Henry's Astrology Page http://www.geocities com/Heartland/Plains/ 8894 Find details about your astrological sign and who you are best compatible with. [Exp #167.]

Joe's Secret Stash http://www2.netcom com/~aguilarj/secret stash A virtual rest area for net surfers, including links and images of the Philippines and Hawaii [Exp #168.]

Kelvin's Domain http:// members.tripod.com/~Khang/index.html Anime and Manga picture site. Soon to ■ filled with Japanese animation [Exp #168.]

Lee's Home Page http:// www.geocities.com/Sili con Valley/Pines/8834 An eclectic site with a surf theme. Links ■ surfing, weather, software, HTML authoring, law, and other interesting sites [Exp. #167.]

dedicated to honoring the Angel Island Immigrants [Exp. #167.]

Phantom's Lair http:// ■■■ js-net.com/phantom Enter any of three worlds. Vietnam War-era 8th Tactical Fighter Wing's Wolf Pack, My World of Macaws, or Corvette Club Home Page. [Exp #167.]

Refrigerium Early Christian ■■ Site http:// www.hooked.net/~bless/ refriger.ium/index.html An entry point for Early Christian (<500 c.e.) resources ■ the Internet [Exp. #167.]

Richard Burnett's Home Page http://members.prod igy.com/YJCN61A/bur nett.htm Personal page that includes biography and curriculum vitae for Bay Area recruiters. [Exp. #167.]

Ted Alvy Cosmos Topper Home Page http://pages. prodigy.com/FNJD74A Mallard, Captain Beefheart, Little Feat, Neon Park, Firesign Theatre, and more [Exp. #167.]

XcraniumX http://pages. prodigy.net/xcranium/ index.html Come to XcraniumX for Mp3 Music, Warez, and help with html. [Exp #167.]

GOVERNMENT/ POLITICS

Corporate Watch http:// www.corpwatch.org As all ■■ Fortune 500 companies jump onto ■■ World Wide Web bandwagon, who's keeping an eye on them? Corporate Watch is! [Exp #167.]

Health-Finder http:// healthfinder.gov Designed to provide consumers with easy access to the widest range available of online, accurate, up-to-date health information from the US government and its many partners. [Exp #167.]

Library Of Congress Information Bulletin http:// ■■■ www.loc.gov/loc/lcib [Exp #168.]

Political Ecology Group http://www.igc.org/peg PEG is a multi-racial, volunteer-based organization working for environmental justice in the SF Bay Area [Exp #168.]

ARTS

The Cannonball Express http://www2.best.com/~ cannonball A video projection-in-progress about urban firestorms, landscaping, and environmental issues [Exp #167.]

The E-Wall http://www. geocities.com/SoHo/3672/ ■ virtual wall on which you are invited to hang a piece of your own art work. [Exp. #166.]

Photos By Lucia http:// home.earthlink.net/~Lucia/ Need a great photographer ■ reasonable prices? Check out the ■ of LA tenswoman Lucia [Exp #168.]

ENTERTAINMENT/ LEISURE

44 Non-Stop Tour http:// www.44tour.com.br Learn more about Rio de Janeiro and Brazil, download pictures and Brazilian sounds. [Exp #166.]

A Games Page http:// www.geocities.com/ TimesSquare/8571/ index.html The current game is Diablo. Check for new games coming out [Exp #167.]

Astrology By Moonlight http://www.masterm com/astrol.html Weekly astrology listings by sign. Multiple links. [Exp #168.]

BayNar Model Rocket Club http://members.aol com/ddavis6747/rockets/ baynar.htm Model rocketry. ■■ affiliated, family-oriented that's fun for all ages. Model rocket launches every Sunday [Exp #168.]

Best Deals In Las Vegas http://www.geocities WallStreet/8580 Free info on best deals on airfare, hotel, dining, show, plus

gambling strategies [Exp #168.]

Club ■■■ http://www.club exo.com New York City supper club and the cologne [Exp #168.]

The CD List Guy http:// home.earthlink.net/~search me/thecdlist/index.html Rare and not-so-rare music CDs, free email subscription, promos, etc. [Exp #167.]

Contest Guide http:// www.ContestGuide.com A guide to contests, sweepstakes, and giveaways on the Web [Exp. #166.]

The DeaD Souls HoMe PaGe http://www.geoc ities.com/Area51/8426/ html.html NiN, Metallica, Soundgarden, Jewel, 311, No Doubt, Garbage, Silverchair, Bush, and more [Exp #168.]

■■ Zaster, Esq. http:// www.globalpac.com/~mp sm/c5.htm The DZ girl is bound for Europe—and the continent ■■ never ■■ ■■ [Exp #167.]

DMTHG Production http://www.dmthg.com Home of the Midi Music Machine, Bishop Gallery, Lion Pub, and ■■winner's photo album [Exp #168.]

Eagle Golf Handicap Service http://www.eaglehand cap.com/ [Exp #168.]

Ebonipearle Productions http://www.ebonipearle com Get Nescape 3.0 or higher and surf Los Angeles with wwa. Some thing for everyone [Exp #166.]

Estes Vineyards http:// home.earthlink.net/~dsm■ Learn to make homemade wine and how growers grow wine grapes [Exp #166.]

Florence Multimedia http://www.florencemm com Florence restaurant, hotel, art, and culture ■■ Net. [Exp #168.]

The Funk—Live Music Video http://www.the funk.com Music video from live concerts. [Exp #168.]

Spotlight

Updates

Product Reviews

PC Software Reviews

EasyCustomInvoices

Published By: MySoftware Company
List Price: $79.95
Review By: David A. Simon, CPA

This is an easy-to-use, inexpensive invoicing system. It can be configured quickly with a set-up wizard, enabling even the uninitiated to produce invoices quickly. The program requires Windows 95.

EasyCustomInvoices fills a special niche for simple billing software in a market dominated by far more complex and expensive packages. Many sole practitioners or tiny business operators who bill infrequently simply use their word processor to create invoices—an awkward approach that fails to track billings and receivables and automatically relate them to one another. The package is ideal for anyone who generate relatively few invoices or has simple billing needs, but wishes to keep track of any A/R they do generate and who wants to send bills that look sharp.

The program performs the basic accounts receivable functions—it tracks time and expenses, generates bills, and lets you log payments.

EasyCustomInvoices presents a handful of reasonable formats and selection criteria, cuts to the chase, and avoids most of the hassles of setting up and running full-bore accounts receivable software. In handling the billing process swiftly it foregoes the additional steps—and features—of other systems used by even small businesses.

For example, don't look here to select fee options or to keep track of multiple client matters under a single account. A solo attorney with many clients, for example, probably would find this package underpowered.

Notwithstanding its entry-level territory, several features are noteworthy. For product and service descriptions, you have your choice of tabular or paragraph format, allowing billers to enter unique narrative descriptions of services provided. The CD-ROM contains a thousand clip art pieces providing logo options for the invoice heading. Existing client lists can be imported from other programs using standard database formats.

EasyCustomInvoices is a great solution for the consultant, independent contractor, or a small service operation that recognizes the importance of good record keeping and a professional appearance. (MySoftware Company, 1259 El Camino Real, Ste. 167, Menlo Park, CA 94025-4227, 1-800-325-3508, URL: http://www.mysoftware.com)

Spotlight

HyperACCESS for Windows 95 and NT

Published By: Hilgraeve
List Price: $129
Review By: Matthew Leeds

Windows users have long been accustomed to getting a free terminal emulator as part of Windows. The HyperTerminal program included with Windows ▪ written by Hilgraeve, which offers both a free upgrade and this commercial upgrade. The commercial version, HyperACCESS for Windows (HAW), fully takes advantage of 32-bit code for speed, long file name support, drag and drop, pop-up menus, docking toolbars, and help wizards. It also supports ActiveX scripting, OLE, VBScript, JavaScript, and DOM. There's a full API for other language compatibility ▪ well.

HAW offers a massive list of emulated terminals, Telnet, and hot-linking to Web sites. Just double-click on an URL then right-click and select Shortcut to, and your browser gets launched with the URL. You can drag phonebook listing to the desktop for quick access, and set up HAW as your default Telnet application. HAW includes support for Microsoft's new Intellimouse. It also checks downloaded files for viruses, including macro viruses, and it ▪▪▪ decompress ZIP files on-the-fly.

I'm particularly fond of the massive scrollback buffer, the spell-checking, the text editing and chat windows, the Z-modem support, and the complete TAPI integration. The built-in graphics viewer (GIF, JPEG, TIF, PNG or other bitmaps) is useful as well. I've also found their technical support ▪▪ be responsive. Check them out ▪ http://www.hilgraeve.com (Hilgraeve, Inc., 111 Conant Ave., Ste A, Monroe, MI 48161. 1-800-826-2760)

RapidRemote For Windows

Published By: Quarterdeck
List Price: $69
Review By: Matthew Leeds

Network managers ▪▪▪ tired of getting out of bed and driving back ▪▪ work in the middle of the night ▪ ▪▪ network problems. Smart network managers quickly learn the advantages of remote management of network assets. One element of such management is a remote control software package such as RapidRemote.

There are two ways to gain remote access to a network: remote node and remote control. Remote node uses a dial-in server (such as a Shiva LanRover) ▪ duplicate the connectivity to the network for ▪ remote computer, albeit at modem speed rather than Ethernet speed. This can work for some applications as long as you're not launching large applications across slow modem links. The other approach is remote control, where you remotely control ▪ computer on your network, and receive screen updates only across that slow modem link.

RapidRemote takes advantage of Microsoft's Graphical Device Interface (GDI) to send function calls rather than bitmaps to update the remote screen. It supports TCP/IP or IPX/SPX network connections, serial connections, TAPI, and ISDN. It offers file transfers and directory synchronization, resolution and color scaling, remote printing, chat, and a host of security features that include password protection, logging, screen blanking, mouse and keyboard locking, and data encryption. The performance across a 28.8Kbps modem link is very acceptable.

The current version is Win95-only but by the time you read this a free update that also supports Win 3.1 and NT will be out. Quarterdeck offers ▪ thirty-day trial version on their Web site (http://www.quarterdeck.com). I was very impressed with how easy it was to install and configure, and how well it performed. Considering the price, it's ▪ excellent value. (Quarterdeck Office Systems, 13160 Mindanao Way, Marina Del Rey, CA 90292. 1-800-683-6696)

PageNOW! for Windows

Published By: Mark/Space Softworks
List Price: $119
Review By: Matthew Leeds

It seems like everyone has a pager these days, and many have alphanumeric pagers capable of receiving text messages. At one time you needed to call an operator and dictate a message ▪ be sent to the carrier of an alpha pager, but these days all you need is a computer, a modem, and the right software. Mark/Space's PageNOW! series is the right software. Long available on the Macintosh, this new Windows version brings the polish of ▪ existing product to a new platform.

This version will work with Windows 3.1, Windows 95, and Windows NT. It comes with a large number of configuration guides for commercial paging services, and is a breeze to set-up. You add pager users to a subscriber list, and can track multiple subscribers across multiple services. You can create group paging sets, and canned messages ▪ compose messages on the fly, see previews of how the message will look on sample pagers, track how many characters ▪ pager will display (PageNOW! will automatically break messages up into the maximum a given pager will support), and maintain and examine logs of messages sent.

You may also add greeting and signature files to every page, schedule messages for later delivery, and import/export lists of subscribers. There is also a full DDE link so that you can pager-enable other applications.

Mark/Space makes paging applications for the Web, for email systems, and for the Newton. They make personal and enterprise paging software systems, and their experience with paging applications is evident in the polish this easy-to-use program evidences. (Mark/Space Softworks, 111 W Saint John St., 4th Fl., San Jose, CA 95113, 408/293-7299. URL: http://www.markspace.com, pagenow_windows.html.)

Quicken Deluxe 6

Published By: Intuit
List Price: $59.95
Review By: David A. Simon, CPA

Intuit's Quicken ▪ the leading personal accounting software in use today by households and very small businesses. It tracks income and spending, and provides financial planning tools as well. The program also handles online banking, bill payment, and investment tracking.

The Deluxe 6 version adds the latest generation of features, many of which are geared to accommodate services available through the Internet. In tracking investment performance, for example, it scans your drive to identify your browser (e.g., Netscape), logs on, and updates your securities portfolio. The investment tracking features install and run almost completely automatically. Stock quotes, by the way, are free for a year.

For users who don't already have an Internet Service Provider, Quicken Deluxe comes with Netscape and information on connecting to the Net. Intuit also sees that the software is updated

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via the Net at any point during the year with practically no user effort.

The interface meets expectations of those who think of instructions as something to be referred to only as a last resort. In such instances, however, help screens include audio coaching and on-screen animated video to demonstrate program features.

Other pluses in the new version are longer field lengths for account names and memos. This fix corrects a longstanding frustration that field sizes had been too small to adequately enter transaction descriptions that mean something to us inelegant, linear thinkers.

To prevent you from making frustrating mistakes, the program recognizes frequent errors before you acknowledge them, and prompts you with on-screen reminders, so you don't feel all alone with your bookkeeping.

A single CD contains both the Windows 3.1 and Windows 95 versions. The Windows 95 version, being a 32-bit application, is designed to run faster. (Intuit Corp., P.O. Box 7850, Mountain View, CA 94039-7850. 1-800-4-Intuit. URL: *http://www.intuit.com/quicken97/*)

Book Review

Running Microsoft Windows NT Server 4.0
By: Charlie Russel and Sharon Crawford
Published By: Microsoft Press
List Price: $39.95
Review By: David A. Simon, CPA

Running Microsoft Windows NT Server 4.0 provides practical guidance that is ideal for businesses looking to build a network based on NT servers.

The NT network operating system has been around for several years and through several versions. Only with the release of v4.0, however, has it begun to have a major impact on the corporate networking market. In the market-share battle with Novell, NT is steadily gaining ground, particularly with small- and medium-sized businesses

What distinguishes this volume from other NT server books is its practical and concise approach. Not only can the reader easily dip into it for specific information, it's also a complete guide to planning and running a successful network. The first five chapters are, in fact, all about planning. The rest of the book is step-by-step guidance on areas ranging from installation to disaster recovery to co-existence with Novell

The authors give straightforward advice on potential pitfalls, with an emphasis on how a manager can maintain both control and a user-friendly environment. Here, you'll find the most thorny concepts in networking such as domains, TCP/IP, and shares v permissions discussed with admirable clarity and brevity. The language is only as technical as it needs to be, and descriptions are understandable the first time they're read

At just over 500 pages, it is designed for everyday use, rather than as a substitute for the rather daunting five volume *Windows NT Resource Kit* also produced by Microsoft Press. *The Resource Kit* is good for looking up technical specifications but when it comes to realistic advice and quick answers, *Running Microsoft Windows NT Server 4.0* is far more useful. (Microsoft Press, One Microsoft Way, Redmond, WA 98052-6399. URL: *http://www.microsoft.com/products/mspress*)

Genghis Angus *http://www.genghisangus.com* One of the best unknown bands in the new breed of grass roots groups like Hootie and Dave Matthews. [Exp #168.]

GT Weather *http://netcontermall.com/gtweather* Weather reports for recreationists—forecasts, satellite images, live ground crews, and highway conditions. [Exp #167.]

H. o. B. Film Production Web Site *http://ourworld.compuserve.com/homepages/boakye* British film investment opportunity. We're taking over the Oscars. If you can't beat them join them! [Exp #168.]

Hotel Carasco *http://space.tin.it/turismo/mdelbono/index* [Exp #168.]

Humor *http://www.masters.com/humor.html* Laff—it's good for your insides [Exp #168.]

InsideWLA *http://www.insidewla.com* Community site featuring restaurants, nightclubs, and shopping. Regularly updated articles, photos, and entertainment section. [Exp #166.]

Island Quest *http://divequest.com* Beginner through technical scuba dive training, travel, and adventure. [Exp #168.]

The Karaoke Zone *http://pw2.netcom.com/~lilalynx/KARAOKEZONE.html* Providing Karaoke and/or DJ mobile entertainment plus additional entertainment options for any [Exp #168.]

Mental Relapse—Back In The 1960s *http://hyperion.advanced.org/11044* An interactive educational 1960s history site [Exp #168.]

Motorcycle Racing With Shawn Higbee *http://www.higbee-racing.com* Professional motorcycle racing information featuring top AMA factory

Ducati Superbike star Shawn Higbee Racing photos and stories [Exp #167.]

The Nunavut Handbook *http://www.arctic-travel.com* A travel guidebook that aims to become the most comprehensive guide to the Canadian Arctic. Now online. [Exp #167.]

OnVideo *http://www.cyberpod.com/cyberpod/onvideo.htm* Complete home video guide to current and forthcoming movies released on tape [Exp #167.]

Pho Nam *http://www.pipeline.com/~phiel/phonam.html* The best PHO Vietnamese restaurant. Three locations—come and check it out. [Exp #167.]

Project EBE *http://www.project-ebe.com* Online source for sci-fi happenings and accessories [Exp #168.]

Rock And Roll Hall Of Fame And Museum *http://www.rockhall.com* [Exp #166.]

Samplemania: Samples On-Line *http://www.samplemania.org* Samples of many instruments and styles all in AIFF and WAV formats for you to use. There will be possibility to purchase music for you site too. [Exp #168.]

Starbucks Morning Coffee Club *http://home.earthlink.net/~bacdoc/coffee.htm* Caffeine-powered humor with tongue firmly in cheek [Exp #168.]

Strychnine Blotter Party *http://home.earthlink.net/~kittyfeet/sinct5.htm* Just your typical psychedelic, death-rock group from Frisko. Music for the bummer of love. [Exp #167.]

Thrills Unlimited *http://www.ThrillsUnlimited.com* The dangerous world of motorcycle daredevil Ken Mackow. [Exp #168.]

Total Gaming *http://members.aol.com/gamefx999* Over 2000 cheats for the PSX, PC N64, and Saturn. Over download and more. [Exp #166.]

Tramline Tours *http://www.tramline.com* Tramline offers free automated online tours on any topic where there are Web resources, including a complete introduction to Internet and technology. [Exp #165.]

Transporter II *http://www.seas.ucla.edu/~painert/transporter2/bootmaxs.htm* Star Trek LCARS based listing of useful sites on the net [Exp #167.]

Tropicana Internatiqust *http://www.cubaweb.com/tropicana/index.html* Promoting Cuban music and culture [Exp #168.]

Video Game And Anime Sound Site *http://www.geocities.com/RainforestV4961/index.html* Get video game and anime sound clips, midis and pictures. Ranma, Renki Warriors, Dracula X [Exp #168.]

Virtual Conventions *http://www.hostcity.com/virtual* Human vs. human networks, multiplayer gaming. Stop playing against the computer. Shoot your buddy instead [Exp #168.]

The Weather Channel *http://www.weather.com* Redesigned to help consumers navigate through the comprehensive weather information and lots of content available on the site [Exp #167.]

Weekly Planet *http://www.weeklyplanet.com* weeklyplanet the alternative weekly that delivers your link to news and entertainment on the Internet. [Exp #166.]

Zonkworld *http://www.zonkworld.com* Football and baseball cards, auctions, chat, etc. [Exp #168.]

MULTIMEDIA 101

Welcome To The Coming Age Of Muddled Media—Part 2

Fighting For Convergence

Two tectonic time-plates of broadcasting, the pre-digital and the digital, ran into each other just before NAB '97, the annual convention of the National Association of Broadcasters held in Las Vegas. The resultant series of earthquakes will likely rupture the mediascape for years to come. Convergence is the buzzword for this era of upheaval as television, computers and telephones mate and mutate. It sounds almost biological, a natural process, but is more like convergence in the sense of armies meeting on the battlefield to clash in bloody confusion as you should expect in any arena with even a whiff of computers and media. Microsoft is one of the combatants. The peculiar sight of NAB '97 was that, in contrast to most computer trade shows where Microsoft is a Goliath, here at a broadcasting trade show Microsoft appeared more as a diminutive David.

In its role as David, Microsoft hopes that it and its allies in the Computer Industry Coalition

on Advanced Television Service (CICATS) have fashioned a slingshot out of the influence they exerted upon the rules for the transition to digital broadcasting of television signals. The story of the long road to eventual replacement of the antiquated National Television System

Committee (NTSC) broadcasting standard detours through the mid-'80s perceived threat of the Japanese development of High Definition Television (HDTV) before the later emergence of digital signals, multimedia on the Internet, and the current "plans" or "rules" for implementing digital broadcasting. 'Tis an oft' told tale of political dealing and influence peddling that, along with concomitant technical detail and some appropriate outrage at the dinosaur broadcasting industry's pigging out at the trough of the public airwaves, was well recounted at some considerable length by Charles Platt in the February 1997 issue of *Wired*; you may—and should—read the full story at *http://www.wired.com/wired/5.02/netizen/*.

In this column's abbreviated and updated version of the tale, Microsoft and CICATS armed themselves for the future battle by cutting a political deal in November 1996 with the so-called Grand Alliance of broadcasters and television receiver manufacturers. In a letter from Michael J. Sherlock of NBC, acting as the chairman of the Consumer Electronics Manufacturers Association, Gary J. Shapiro

BY JONATHAN E.

MultiMedia & BEYOND

president of CICATS, and Paul E. Misener of Intel, to Federal Communications Commissioner Susan Ness, the computer industry side agreed that "neither CICATS nor its member companies nor their representatives will directly or indirectly seek to oppose or delay—before the FCC, by judicial review, legislatively or otherwise—final adoption of the positions urged by broadcasters and consumer electronics manufacturers." More crucially, from the broadcasters' financial point-of-view, the letter also stated, "Nor will they support efforts in Congress or elsewhere for auctioning of spectrum allocated or to be allocated for digital television." In return, it was agreed that "the FCC standard should include language clarifying that data broadcasting is ▇ permitted ▇▇ under the standard. Data broadcasting is defined as the transmission of any type of data other than real-time video and audio programming" and, further, that "Video and audio services may be enhanced by providing augmentation data."

In short, while appearing to detail some agreement reached, this deal actually outlines the rules of engagement and what's out-of-bounds. It sets the stage for broadcasting anarchy and a period of intense consumer confusion—although the expression used by FCC chairman Reed E. Hundt in a statement applauding his commission's acceptance of the deal right before NAB '97 is "a movement away from a command and control policy toward a market orientation for the business of digital television." This may or may not be a good thing depending on who you are, how old you are, and what you want. It certainly means that us a consumer you should avoid buying a new television, or at least spend the absolute minimum, eschewing screen size and fancy features, until the smoke of battle clears and we can identify and count the dead.

THE THRILL OF BATTLE

In the long view, the advent ▇▇ digital television (DTV) is the next campaign in the long march of multimedia from esoteric high end lab toy to ordinary everyday consumer medium. In the broad view, DTV is about breaking the ▇▇▇ ▇▇ barrier of PC penetration into American homes and bringing the fruits of the Internet to an even wider audience. It is likely to chrysalize the old debate of ▇iewing the interlaced TV screen from the couch about 8 or 9 feet away versus

viewing the progressive-scan computer screen from a chair a couple of feet away from an academic larva to a marketplace butterfly. The question may even be whether the new breed of computer and media companies will do to traditional broadcasters what the interstate freeway system did to the railways.

Briefly, digital broadcasting can use a lot less spectrum than analog depending on size and resolution of the image. If current-quality television images were digitized, compressed and digitally transmitted they would use only one-sixth the bandwidth as they do now. The broadcasting industry liked this fact and immediately figured that TV stations could then use the left-over five-sixths of each station's allocated channel for other profitable purposes such as busi-

ness data and paging, purposes more private and other than why they were originally granted the use of the public's airwaves. This, of course, did not sit well with some members of the public who felt that the spectrum should be recovered by the FCC and auctioned to the highest bidders or that TV stations should be required to use their original spectrum to improve their picture quality with such enhancements ▇▇ HDTV or even to offer new consumer services made possible by digital transmission. Strangely, some of those members of the public were in the computer industry. Presumably they objected to this potential heist of the public's airwaves on principle, but there were also good business reasons for them to do so.

As Platt explains in his article, even after years of trying to come up with ▇ new system the Grand Alliance of the broadcast industry remained conflicted over formats, standards, resolutions, and other technical and business details. The best conclusion it came up with was the non-conclusion of allowing eighteen different broadcasting standards to coexist and requiring TV manufacturers to build receivers that could deal with it! Sounds a little like the computer industry, doesn't it? And like the com-

puter industry, there was the chicken-and ▇▇ or killer-app problem. Who would broadcast ▇ any enhanced format until there are receivers out there? Who will buy an expensive new TV set when there's no enhanced programming?

The most significant problem with the Grand Alliance's proposal, however, was that the eighteen standards did not include one for progressive-scan screens, the very bedrock of modern computer displays. Progressive-scan screens ▇▇ the reason why computer screens look sharp and have no flicker, thus allowing one to do such basic things as read off them. The broadcast industry's omission of progressive-scan screens may have been because it's unbroken news to that industry that people read off screens, it may be that there is indeed a broad

Convergence is the buzzword for this ERA OF UPHEAVAL as television, computers, and telephones MATE AND MUTATE.

cast media conspiracy to keep the great unwashed dazzled by spectacle rather than substance, perhaps it had just never heard of convergence, but most likely it was that progressive scan cannot be compressed as much as an interlaced signal and so there wouldn't have been ▇ much leftover bandwidth for television stations to exploit. Of course, the computer industry had to step in and begin to skirmish.

What the letter to Commissioner Ness revealed was that in return for not going straight for the broadcasting industry's jugular, its reliance on using the public airwaves at minimal cost, the computer industry would be allowed to join the DTV battle with progressive scan ▇ its standard. On December 26, 1996 the FCC announced ▇ concurrence with this agreement to disagree by accepting the suggested "standard" that "allows transmission of one of two High Definition Television programs: four, five or more Standard Definition Television programs at ▇ visual quality better than the current analog signal; many CD-quality audio signals and the delivery of large amounts of data. The standard does not include requirements with respect to scanning formats, aspect ratios and lines of resolution." On April 3, 1997, the FCC

MULTIMEDIA 101 *continued*

announced the allocation of spectrum for digital transmissions to broadcasters, an accelerated schedule for conversion ■ DTV, and even plans to recover for auction some spectrum no longer used by current broadcasters. In some ways, it's a masterpiece of compromise. In others, it's an incredible example of Orwellian Newspeak, promising all sorts of benefits to consumers without acknowledging the downside, which over the next five years or so is likely to be severe. Civilians always suffer in war.

THE SPOILS OF WAR

When it comes to the conversion from analog to digital broadcasting, it may be, as is said about certain bodily functions in the weightlessness of space, that "There ain't no graceful way." Current TV sets will not pick up digital signals. Set-top converters should become available but obviously you wouldn't get the full benefits of improved picture or most extra services

Without doubt, you're going to have to invest a further fair chunk of change in your current home theater to watch digitally broadcast television. New digital TV sets will supposedly be available by Christmas 1998 with, Chairman Hundt promises, "three or four network-affiliated digital signals in the top ■■ markets by April 1, 1999, roughly ■ months from now, and three network-affiliated signals in the top thirty markets by November 1, 1999, roughly 30 months from now." Ten years from now, all analog broadcasting is scheduled to stop.

In the meantime, Microsoft and other members of CICATS think they have ■ potent weapon in the war to establish the new standard of progressive scan. That weapon ■ the computer industry's experience with rapid product development, frequent revision and upgrading, new market development, and free-market rough-and-tumble. The theory is that, besides new computers being ready ■ receive DTV signals out of the box, tuner cards will be

available as add-ons to older computers. Supposedly, traditional consumer electronics companies will ■■ be able to get product ■■ the shelves ■ fast as computer companies. It's hard to take this claim seriously, but, according to *The Wall Street Journal*, Ron Whittier, ■■ president, predicts that by the year 2000 there will be 100 million computers able ■ receive DTV compared with only one million TV sets.

If that becomes the case, there will obviously be no shortage of "content providers" lining up to produce programming. But that little old chicken-and-egg problem is still on the road between here and there. Microsoft is attempting ■ get around this by both producing new programming for TV, enhanced DTV and the Web, and by producing tools such ■ NetShow that stream multimedia over the Web and for some integration with broadcast-over-the-air programming. Intel for its part has a process called Intercast that uses the Vertical

Virtual Peru

Being There In Multimedia

The Landscapes of Civilization:
Panoramic Views of Pre-Hispanic Peru

Chavín
Chimú
Huari
Inca
Lambayeque
Moche

Inca

Machu Picchu

Accompanying almost every major museum show of ancient, classical and ethnic art are sponsored and guided travel tours, available for those patrons who want to experience firsthand the environments that gave birth to the world's great art.

Many more would go if only they had the time or the money for the trip. Now more museums are turning to virtual reality "travels" through the computer and the World Wide Web to let visitors enhance their experience with at least a bit of the sense of "being there."

CONTEXTUALIZATION

Museums have made great progress in "contextualization," where the objects of art are placed in the context of the communities that used them and the worlds they inhabited. Curators and designers present collateral and supportive exhibits and materials that put a human face on the cultures that created the art.

"The Spirit of Ancient Peru: Treasures from the Museo Arqueologico Rafael Larco Herrera," a show at the M.H. de Young Memorial Museum in San Francisco which runs until August 10, has done just that. It was organized by the Fine Arts Museums of San Francisco and curated by Kathleen Berrin, FAMSF curator of Art from Africa, Oceania and the Americas.

You might think that only the museums of contemporary art are risking new technologies to enhance their exhibits, but many classical museums, like the Louvre with its groundbreaking Web site, are often ahead of the pack. Just last year, here at the de Young, we saw "Virtual Pompeii," emulating the Temple of Isis and the Grand Theater. That exhibit was curated by Renee Dreyfus, curator of Ancient Art and Interpretations, and created by Carl Eugene Loeffler, with

BY TONY REVEAUX

MultiMedia & BEYOND

SIMLAB at the STUDIO for Creative Inquiry at Carnegie Mellon University in Pittsburgh. This immersive exhibit was configured for an audience of about fifty, wearing Stereographics glasses viewing a 3-D projected image of the space as navigated by one person with a trackball and a head-mounted display (HMD).

VIRTUAL PERU

At "The Spirit of Ancient Peru," you'll find a very clear and capable "virtual reality tour" of fifteen Peruvian archeological sites and environments where you ■ click and drag on a Macintosh and everyone in the room can see the results on a wall displayed through a video projector. Instead of the more ambitious and technically "iffy" immersive theatrical VR of "Virtual Pompeii," this time the de Young went with a more "CD-ROM-like" self-guided desktop-type VR. This Peru program will be made into a CD-ROM as well.

Finding this VR facility at "The Spirit of Ancient Peru" will take some sleuthing skills, as it is buried out of sight at the far end of the Education Room past the Reading Table. The installation has a kiosk with two Macintoshes ■ a table, one which drives the video projector, and the other which can be independently controlled and has a monitor for its display.

Well-designed pictorial menus bring the viewers into the mapped environments of the sites that nurtured the fascinating variety of expressive pottery, fabrics and jewelry arrayed in the galleries beyond. The Chavín, Chimú, Huari, Inca, Lambayeque and Moche pre-Hispanic cultures are arrayed in ■ bar column As you move the cursor over each bar, the sites of that culture are highlighted on the map of coastal Peru with pop-up name labels for each city. Click on the bar, and you are brought to that culture's menu page. There you are presented with the sites, and each site menu shows the nodes on the city map where each panoramic point of view is centered.

SPINNING AT THE TOP OF THE WORLD

Each of the fifteen panoramas is navigated by clicking and dragging the cursor on the screen. You can look all around, tilt up and down, and zoom in and out using the keyboard. The zooms are not high-resolution, so they quickly crumble, but they're effective in expanding the viewer's involvement in the site. The spectacular mountainscapes and skies framing the villages and ancient structures come through wide and clear enough to make your ears pop.

There are seventeen virtual objects in the program that allow you to do what is off-limits in the galleries; you can "handle" the artifacts. All these objects can be spun on their horizontal axes, so you can examine all the surprising details and rich character of treasures like ■ Double-Spouted Architectural Vessel and the gold Janus cup from Keros.

PANORAMIC VISIONS

Dr. John W. Rick, associate professor, curator of Anthropology Collections and an archaeologist at Stanford University, had been working in Peru for three years at a site called Chavin de Huantar. He came back with about 150 photo panoramas from there, and then fifty more from other sites. Each panorama was composed from a series of a dozen 35mm photographs using Fujichrome Provia stock and shooting with ■ 17mm lens mounted on a Kaidan self-leveling panoramic tripod.

"I was contacted by curator Kathleen Berrin about the de Young show," says Rick, "and the right resources and expertise came together to make the virtual reality aspect part of the exhibit."

The project ■ collaboration of Live Picture, the Fine Arts Museums, and Dr. Rick; it took the work of two or three people for a month and a half. Live Picture provided the funds for digital picture processing; it also donated $5,000 worth of equipment to the Museum for the kiosk ■ d display, ■ well as technical support and programming. It also produced the finished presentation. Live Picture's Eric Froehlich, content designer, did the interface design.

Jonathan Ledergerber, content engineer at Live Picture, explains: "The actual presentation is running in Macromedia Director. Our Xtra for Director allows Director developers to use our RealVR technology within that environment I did the Director programming."

The RealVR technology is the combination of panoramic image viewing with IMOBs (image-based objects) which are very similar to QuickTime VR Object Movies. PhotoVista ■ Live Picture's panorama stitching program; FlashPix is ■ image format which allows you to bring higher resolution data and serve it ■ er the Internet.

A LEGION OF MEDIA

As assistant to the director of the Fine Arts Museums, Dakin Hart is the point man for all of their high technology projects. He did all the actual linking of the panoramas and the Peru program itself.

He is also responsible for the Web site, where you will find information and visuals of the Peru exhibit ■ well ■ "Art of the Americas: Cultural Crosscurrents Virtual Gallery." This page, found

> At "The Spirit of Ancient Peru," you'll find ■ very clear and capable "virtual reality tour" of fifteen Peruvian archaeological sites and environments where you can click and drag on a Macintosh and everyone in the room can see the results on a wall displayed through a video projector.

MultiMedia & BEYOND

Blanking Interval between video frames to transmit data to the desktop. This works even with analog signals and cable, requiring only a TV tuner card and software costing between $99 and $150. MTV broadcasts two hours a day of Intercast programming while its second channel, M2, is already 24/7.

These are early days yet but what we're seeing is a lunge by Microsoft and Intel to grab the audience of tomorrow. Given the peculiar position that television has in American culture and family life, there are a lot of wild cards out there that haven't been addressed yet. Plenty could go wrong from any player's position. Although it seems unlikely, Microsoft's purchase of WebTV could be overturned by the Justice Department. Chairman Hundt's promise of how many stations will have made the switch to DTV by November 1, 1999 could be ludicrously optimistic. The American public could flat-out refuse to spend thousands of dollars replacing their analog sets, choosing instead to spend

their viewing time endlessly watching old movies on the VHS VCR. DVD could be a hit or not. There's always the tussle over who has the remote—when the remote becomes a mouse will everyone retreat to their own private set? How does cable fit into the picture? Will cable-modems and services like @Home become significant players? What about satellites? And Microsoft has plans for over 800 of those! Ultimately, there's a question over whether tomorrow's audience will prefer the directed and limited world of professionally produced media, which by its market definition can only have many players, or the wide-open amateur spaces revealed by such developments as 'zines, pirate radio, and the Web, which can have a virtually limitless number of producers.

I make two fearless predictions: If you're over 10 years old today, don't worry—you're not a target

in this war, you're already over the hill. These developments will take a good long time to roll out whatever the FCC says. Having left the decisions in the marketplace, the war over technical standards could rage first one way and then the other almost indefinitely. The short-term battle is to determine the media habits of today's under-10s and success there will be the foundation of long-term future success. Secondly, the first truly great artistic work of interactive multimedia will be a remake of "Citizen Kane" with Bill Gates in the role originally played by Orson Welles. Oh, and a third one. This column will return to this subject.

Ten years from now, all analog broadcasting is scheduled to STOP.

MultiMedia & BEYOND

the Fine Arts Museums site, has the link to Live Picture so you load the RealVR Traveler plug-in enabling you to navigate the panorama this Webtop VR.

"My next project," says Hart, "is to do the Virtual Legion of Honor. The idea will be to offer what in some ways will be better than the actual museum. We'll offer a virtual panorama each room. Every object will be clickable and spinnable. The ceilings of the rooms will be

fully-viewable spheres. We'll link all that in with some portion of our database that will allow you to go from one object to find and examine other related objects that are in the collection. We will make this into a CD-ROM and then we'll make some pages on the Web, either as a skeleton version, or we'll do a couple of complete galleries as highlights. We may also just turn it into a completely virtual thing the Web and create a VRML gallery of highlights from the

collection. We will experiment with different approaches."

You might think that only the museums of contemporary art are risking new technologies to enhance their exhibits, but many classical museums, like the Louvre with its groundbreaking Web site, are often ahead of the pack.

RESOURCES:

M.H. de Young Memorial Museum
Golden Gate Park
75 Tea Garden Dr.
San Francisco, CA 94118-4501
(415)750-3614
URL: http://www.thinker.org

Live Picture
2105 South Bascom Ave., Ste. 248
Campbell, CA
(408)558-8045
realxtra@rlspace.com
URL: http://www.livepicture.com

Resources

Calendar Of Events

Conferences, Shows, Special Events

June

June 19–21 Electronic Entertainment Expo (E3). Atlanta, GA. IDSA. Contact: 1-800-315-1133, or URL http://www.mha.com/e3/.

June 21–22 Computer Fair. Boulder Sahara Swap Meet, Las Vegas. National Productions. Contact: 1-800-800-5600.

June 21–22 Computer Super Shows. Glendale Civic Auditorium. Super Show Productions. Contact: 1-800-800-5600.

June 23–27 ATM Year '97. San Jose. Contact: 1-800-200-4884 or URL: http://www.tticom.com/atmyear97.

June 26–28 MacHack Conference. Dearborn, MI. Contact: URL http://www.machack.com/97/.

June 28–29 Computer Fair. Fairplex Expo Center, Pomona National Productions. Contact: 1-800-800-5600.

June 28–29 Computer Super Shows. Riverside Convention Center. Super Show Productions. Contact: 1-800-800-5600.

June 30–July 2 Potlatch National Educational Computing Conference (NECC). Seattle, WA Contact: 1-800-280-6210, necc97@uce.uwu.edu. ■ URL: http://uce.uwu.edu/necc97

July

July 2 How to Build ■ Maintain a Profitable Consulting Practice. Woodland Hills The Center for Consulting and Professional Practices. Contact: (310)324-2386, or umooneya@ix.netcom.com

July ■ Computer Super Shows. San Bernardino Nat'l/Orange Show Fairgrounds. Super Show Productions. Contact: (714)459-6105

July 12 Computer Fair. Sherman Square

JUNE 23
BMW CyberDrive
INTERNET

A joint Internet effort from Apple Computer, Inc., and BMW of North America, Inc., BMW CyberDrive begins on June 23 and will allow computer users to experience some of the world's greatest wonders via their Web browsers and possibly win valuable prizes ≡ the same time. The BMW CyberDrive will provide "test drives" through twenty-one Internet destinations such as a journey on the Trans-Siberian railroad, ■ Napa Valley balloon ride, ■ roll over some of the world's greatest rollercoasters and even the opportunity to design a golf course. Powered by Apple technology, the twenty-one Web sites will feature movies, animation, and innovative games and activities. Participants can also search for prizes such as an Apple eMate 300, an Apple MessagePad 2000, an Apple Power Macintosh 6500 Creative Studio, or the grand prize of a one-year lease of a BMW Z3 roadster plus an Apple Twentieth Anniversary Macintosh. The BMW CyberDrive will be online for four weeks. To participate or to learn more, contact http://www.bmwusa.com.

JUNE 28—29
Computer Fair
POMONA

Produced by National Productions, Inc., for over thirteen years, Computer Fair (formerly Computer Marketplace) covers 100,000 square feet with over 300 exhibits featuring multimedia systems, notebook computers, software titles, modems, and other peripherals at discount pricing. Open 10–5 pm, admission $8 For more information, call 1-800-800-5600, or URL http://www.computermarketplace.com

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Entertainment Center, Reseda National Productions. Contact: 1-800-800-5600

July 13 Computer Fair. Sequoia Conference Center, Buena Park. National Productions. Contact: 1-800-800-5600.

July 19–20 Computer Fair. Fairplex Expo Center, Pomona. National Productions. Contact: 1-800-800-5600.

July 26 Computer Super Shows. Glendale Civic Auditorium. Super Show Productions. Contact: (714)459-6105.

July 26–27 Computer Fair. Henderson Convention Center, Las Vegas National Productions. Contact: 1-800-800-5600.

July 27 ACP Computer Swap Meet. Santa Ana. ACP Superstore. Contact: (714)558-8813.

July 27 Computer Super Shows. Riverside Convention Center. Super Show Productions. Contact: (714)459-6105.

August

August 2 Computer Super Shows. California State University, Long Beach. Super Show Productions. Contact: (714)459-6105.

August 9–10 Computer Fair. Fairplex Expo Center, Pomona. National Productions. Contact: 1-800-800-5600.

August 10 Computer Super Shows. Riverside Convention Center. Super Show Productions. Contact: (714)459-6105

August 16 Computer Fair. Earl Warren Showgrounds, Santa Barbara National Productions. Contact: 1-800-800-5600

August 20–23 ISPCON '97 (Internet Service Provider Convention). San Francisco Contact: 1-800-933-6038, or URL http://www.ispcon.com

August 23–24 Computer Fair. Sherman Square Entertainment Center, Reseda National Productions. Contact: 1-800-800-5600

August 23–24 Computer Super Shows. Orange County Fairgrounds. Super Show Productions. Contact: (714)459-6105.

Resources

August 30 Computer Super Shows. Glendale Civic Auditorium. Super Show Productions. Contact: (714)459-6105.

August 30–31 Computer Fair. Fairplex Expo Center, Pomona. National Productions. Contact: 1-800-800-5600

September

September 8–11 Electronic Commerce World. Philadelphia, PA. Contact: 1-800-336-4887.

September 9–11 Internet Commerce Expo (ICE) Conference Program. Los Angeles. IDG. Contact: 1-800-667-4423, or URL: http://www.idg.com/ice.

September 13 Computer Fair. Sherman Square Entertainment Center, Reseda. National Productions. Contact: 1-800-800-5600.

September 14 Computer Fair. Sequoia Conference Center, Buena Park. National Productions. Contact: 1-800-800-5600.

September 14–17 ICSPAT/DSP World 1997. San Diego. Contact: Denise Freeman, (415)278-5231, dsp@expoffeg.com, or URL: http://www.dsp world.com.

September 15–17 ICSPAT/DSP World 1997. San Diego. Miller Freeman, Inc. URL: http://www.dspworld.com.

September 15–18 IT Forum '97. New York, NY. Contact: 1-800-232-3976, or URL: http://www.itforum.com

September 20 Computer Fair. Earl Warren Showgrounds, Santa Barbara. National Productions. Contact: 1-800-800-5600.

September 27–29 Computer Fair. Henderson Convention Center, Las Vegas. National Productions. Contact: 1-800-800-5600

September 29–October 2 Embedded Systems Conference. San Jose. Miller Freeman, Inc. Contact: URL: http://www.embedsyscon.com

Classes, Seminars, Workshops

June

June 19 Hands-On Intro to mTropolis. Santa Monica. LAMG. Contact: (310)319-1821.

June 21 Adobe Photoshop 4.0 Class. Long Beach. Megabyte Coffeehouse. Contact: (562)986-6892, or URL: http://www.megabyte coffee.com/

June 21 Photoshop Power. Santa Monica. LAMG. Contact: (310)319-1821.

Resources

June 22 HTML Basic Web Designing. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www.laba nex.com/html.*

June 24 Hands-On Beginning Mac. Santa Monica. LAMG. Contact: (310)319-1821.

June 24 World Wide Web: A Hands-On Introduction. Fullerton. Cal State Fullerton Extension. Contact: (714)773-2611.

June 25 Low Stress Computing. Santa Monica. LAMG. Contact: (310)319-1821.

June 25 Hands-On Director. Santa Monica. LAMG. Contact: (310)319-1821.

June 26 Creating Your Home Page For The World Wide Web. Fullerton. Cal State Fullerton Extension. Contact: (714)773-2611.

June 28 Intro to Windows 95. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-

6892, or URL: *http://www.megabytecoffee.com/* .

June 29 HTML Advanced Web Designing. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www.labanex. com/html.*

June 30–July 9 Advanced Adobe Illustrator 6.0. Fullerton. Cal State Fullerton Extension. Contact: (714)773-2611.

July

July 12 Internet Workshop for Beginners. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www.megabyte coffee.com/*
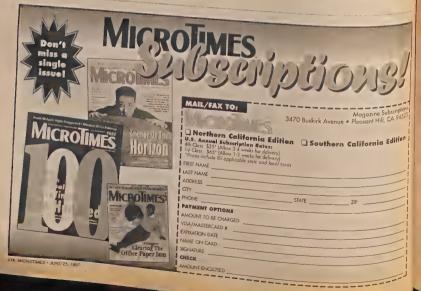
July 13 HTML Intermediate Web Designing. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www. labanex.com/html.*

July 14 Claris FileMaker Pro 3.0: Let's Get Relational! Los Angeles. QMUG/LA. Contact: (213)222-QMUG, or QMUGLA@aol.com

July 19 Adobe Photoshop 4.0 Class. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www.megabyte coffee.com/*

July 20 HTML Basic Web Designing. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www.labanex.com/html*

July 26 Intro to Windows 95. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www.megabyte coffee.com/*

July 27 HTML Advanced Web Designing. Long Beach. Megabyte CoffeeHouse. Contact: (562)986-6892, or URL: *http://www. labanex.com/html.* ∎

User Group Network

BULLETIN BOARDS

MULTIZONE

Ace Web Network. Multizone (818)891-0397, 782-3589, 240-6356, (805)257-1690, (310) 479-6375 24 hrs. 300–33,600 Internet access, PPP, storage, chat, games, entertainment, unrestricted usenet news server [Exp #166]

Annex! Multizone (818) 779-5600, ■ Telnet. annex.com. 28,800 5MB of personal Web space with paid accounts, starting ■ $4/month and up [Exp #168]

Baud Town BBS. Multizone (805)520-4759, (213)765-0057, (818) 508-5001, 712-5846, 782-8221, 285-7221, Telnet baudtown.com ■ ■. 14,400–33,600 Internet mail, 56 lines, public/private chat files. free trial Sysop. Lea (sysop@baudtown.com) [Exp #170]

Beeline BBS. Multizone (213)934-3437, 344-0960, (310)640-6491, 637-9189, (562)598-4990 (805)526-6346, 287-6162, 268-0080, 273-0479, 532-1416, (818)752-1714, 888-7054, 885-7064, 799-4768, 448-7738 8-N-1, ■ ■ ■ 32-line ■ ■ ■ ■ CD-ROM One month free trial [Exp #168]

Brain Toys ■ Multizone (818)988-3550, 557-8697, 707-4476, 700-9877, (213)225-3309, (310)695-7093 ■ ■ ■ 656-0070 MajorMUD, 32 lines, Tradewars, Doom 2, Backgammon, chat. Free trial, all ages. [Exp #166]

Coffee Break BBS.

Multizone (310)425-5710, 320-5000, (714) 670-6500, 572-8900, 537-4300, 262-1200, (818) 961-1700, 447-6100, 797-6400 General interest, 20 lines, chat, MajorMUD, Tradewars, files email. Free trial Ultimate caffeine buzz! Sysop Coffee [Exp #166]

Eden BBS–The Electronic Garden Multizone (310) 421-2420, 352-4199, 838-1707, (714)548-1900, 530-6335, 528-7226 472-9456, (818)336-9322, (909)279-2600, Telnet edenbbs.com 24 hrs. 14,400–28,800 64 lines Full Internet access, WorldGroup for Windows Sysop Daniel Vesely [Exp #168]

Gamma Quadrad BBS. Multizone (714)848-3048, (562)598-3620, IC gammaquad.com port 3004 24 hrs., up to 33,600 Firstclass system, Star Trek themed. News groups and Internet email. OneNet access. Free to $19.95/year [Exp #168]

Miller's Party Board. Multizone (213)727-0257, 509-9191, (310)815-0117, 929-4304, 212-3469, (714)739-1060 537-4436, 964-0311, (805)583-3142, (818)769-2302, 700-0267, 240-8296, 577-5880, 961-2458 Telnet mpb.com ■ ■. 14,400-28,800 Full Internet, chat, games, Muds Free 14-day trial Sysop Jack Stern [Exp #168]

Wonderful's Lair. Multizone (213)261-6055, (818)451-0874 24 hrs., up to 33,600 Internet, echomail, games, share-

ware, MatchMaker. Free 14-day account URL http://www.cris.com/~Barceras/index.shtml Sysop Mr Wonderful [Exp #166]

The Fad ■ **The Line BBS.** Multizone (818) 296-1169, 783-4575, (213) 686-0166 One month free trial, pubs, parties, email Extensive CD-ROM library, games chat MatchMaker Adult social board running latest WorldGroup software, female run and owned It WILL be fun [Exp #167]

OPAMP Technical Books ■ (213)957-6915 8-N-1, ■, 300–14,400 Computers, engineering, business, trades. 20,000+ titles listed. 5% discount [Exp #170]

Westside. (213)316-4444, (714)857-4571, (818)723-4444, 709-0729 Games, chat, files, forums, fun. Since 1987 [Exp #168]

310

Bizopps Connection. (310) 677-7034 8-N-1, ■ hrs., up to 38,400 Business opportunities-oriented BBS, S8A files and more Sysop Lawrence C Toliver [Exp #166]

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28,800 Files, 9 CD-ROMs, games, WorldGroup software, recovery forums, etc Free - 180 days Sysop skYwalker [Exp #166]

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Upper Transylvania BBS. (310)515-6843, 515-6953, 515-7996, 515-1757 24 hrs., 14,400 Christian, family-oriented. 20 active CD-ROMs updated regularly Free Sysop Ron Hoffman [Exp #166]

Westside BBS. (310)574-7474, Telnet bbs.westside.net 24 hrs., Chat, games, file area, message base, etc Free/fee Sysop Helene 6 [Exp #168]

562

Bushidokal BBS. (562) 698-8719 8-N-1, 24 hrs., ANSI/RIP, subs, files, games, multi-networks, free access. WWIV v4 24a Sysop The Animal [Exp #166]

Datecom Online Dating Service. (562)799-6191, 9600–28,800 Photo personals, chat, private email, entertainment [Exp #170]

714

The Abyss BBS. (714) 848-9039 8-N-1, 24 hrs., 300–33,600 WWIVnet, Fidolnet echos, Internet email/newsgroups, shareware/public domain files, games, more No fee! [Exp #168]

The Emerald Isle BBS. (714)870-3050. 8-N-1, 300–28,800. 31 lines Chat, multiplayer games, game connection, fun for all, everyone welcome Twelve-day trial, then subscription Sysop James Wihardja [Exp #166]

The Midnight Mission BBS. (714)848-6808 8-N-1, 24 hrs., 2400–33,600 Large game, XX-GIF file areas Full access with call back Sysop Marty Strech [Exp #170]

805

SCV PC-Users Group BBS. (805)291-1002, 291-1003 24 hrs., 2400–14,400 Files, Interlec email, Wildcat BBS [Exp #167]

818

Catwoman's Back Alley BBS. (818)930-0805 URL http://www.cat-bbs.com 24 hrs., 16 lines, Telnet, email, games, newsgroups, MatchMaker, windows95.com file site. Free 10-day trial [Exp #167]

Cross Connection BBS. (818)994-8867 24 hrs., 2400–28,800. Cross-dresser/transsexual focus Selected Usenet newsgroups, JPGs, stories, chat Free access (fee for Internet email access, age verification required for adult areas) [Exp #166]

Downlow BBS. (818)281-5579. 8-N-1, 24 hrs., 33,600 Games, 14,000+ shareware titles [Exp #168]

Earthquake City BBS (818)368-3337 8-N-1, 24 hrs. 28,800 Four lines Files, messages games, 1GB online Free/fee for Internet email Sysop Steven Libs [Exp #168]

Ethereality BBS. (818)884-6700 14,400–28,800 Chat, files, LORD, BRE TW Free user level, subscriptions start at $3.00 [Exp #170]

Gamelink ■ (818)951-0131 8-N-1 24 hrs 14,400 Online games MajorMUD, TradeWars Game Connection, CD-ROMs, live chat Free via $5.00 per month [Exp #170]

The Jungle II Client Server. (818)914-9010 8-N-1, 24 hrs 56,000 Worldwide chat MajorMud, network gaming server 100 new MB a day, 17 lines, Internet email forums, no fees [Exp #168]

The Patchbay BBS (818)683-0627, Telnet bbs.patchbay.com, URL http://www.patchbay.com , FTP ftp.patchbay.com 8-N-1, 24 hrs 2400– 33,600 Windows and Internet archives, Dangerous Cybernetics support site Free Internet email Sysop ■ net Bilse [Exp #167]

909

California Information Services. (909)930-2750 24 hrs., 28,800 Shareware, games, chat email, forums Windows RIP, ANSI Sysop Roland and Randy [Exp #167]

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**Church needs 486 or 386 PC & monitor in exchange for an income tax credit. Please call and ask for Jerome Stevens @ (213) 664-6422

WANTED: 10 VGA MONITORS for computers to set up labs for school children in South Africa. To donate computers or other equipment, contact Many Waters Ministries @ (818) 872-2319

Want to buy Tandy. Model 100 or 101 only please. Call. (562) 427-1303.

Goodwill Industries of Orange County needs your tax-deductible 486 computer system in good working condition. As a non-profit organization, donors play a vital role in our ability to fulfill our mission to provide people with disabilities the opportunity to achieve their highest level of personal and economic independence. Please call Walter Schorsack @ (714) 547-6308, Ext 249 or visit our website at http://www.ocgoodwill.org

Non-profit organization needs computers for a community computer center. Tax write-off. Call (213) 894-4158

WANTED: Old 1991 Apple One scanner. Pay $50. Also used UMAX Vista S5E Scanner Call Joe @ (818) 845-8282

ORANGE COUNTY YOUTH CENTER, INC., a non-profit organization serving abused & neglected youths in group-home settings, are currently seeking donations for our program - such donations as furniture, game tables, appliances, and sports gear. Interested parties can contact Shari or Steve at (714) 280-0800

WALKING SHIELD AMERICAN INDIAN SOCIETY- A non-profit organization which provides humanitarian assistance, needs your donation of 386 or 486 PC computer system in good working condition. Help us reach out to schools on the fifteen reservations that we serve. Contact Hugh at (714) 573-1434

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CLASSIFIED
ADVERTISING SECTION

continued from page 2...

USER GROUPS

AMIGA

Amiga–San Gabriel Valley (ATUG). Meetings 3rd Sat., 11 am–4 pm 1st Southern Baptist Church, 4856 No Golden West Ave., Temple City Contact Steve, (818)285-6424 [Exp.#168]

ATARI

ATESIG–Atari 8-Bit SIG 145 Surf ▒ Seal Beach Cooperative user group for model railroad applications Contact (562) 430-5433 or ▒ MCALL ISTE2@genie com [Exp.#171]

CAD/CAM

Los Angeles AutoCAD User Group. Meetings 4th Wed., 6:30 pm, Burbank Board of Realtor's, 2006 ▒ Magnolia Blvd., Burbank. Newsletter, demos, tutorials, supports AutoCad, 3D Studio and AutoDesk products Call Michael Berman, (818) 762-9966 info@lacad org ▒ URL http //www ▒ org [Exp.#171]

COMMODORE

C=TUG. Meetings 2nd Sun 12:30 pm. 10 75 Oliver Orange For friend ship advice, and Commodore computer ▒ A library of PD disks monthly newsletter and much more ▒ Palush (714)532-1802 [Exp.#166]

IBM AND COMPATIBLES

Greater South Bay IBM Users Group Meet ▒ 2nd Thurs ▒ 6:30 ▒ Torrance Rec ▒ Center behind To ▒ ▒ Library Contact (310)373-3989, or BBS ▒ [Exp.#171]

ZE MICROTIMES • JUNE 25, 1997

Long Beach ▒ PC And Compatibles Users Group. Meetings 3rd Wed 7:00 pm, Masonic Temple 5155 E Pacific Coast Hwy Long Beach We welcome ▒ novice and ▒ experienced BBS, video library, newsletter, SIGs Contact Jim Wells, (310)439-7114 [Exp.#168]

Los Angeles Computer Society. Meetings 2nd Tues 7:00 pm, Robert Frost Auditorium, Culver City High School, 4401 Elenda St, Culver City Door prizes, vendor presentations, product review, special interest groups BBS w/internet email Contact (310)471-2726, or URL http.// users aol com/lacspcug/ index.htm [Exp.#169]

NOCCC (North Orange County Computer Club). Meetings 1st Sun. 9:00 am Chapman University, 333 N Glassell Ave., Orange Park Senior Citizen's Center 405 S Santa Anita Ave Arcadia Support for Tandy and IBM compatibles BBS ▒ list ▒ ▒ RAM ▒ Contact Jack Mock, (818)578-0411 [Exp.#166]

SCV PC-Group Meetings 2nd Wed., 7:00 pm, Valencia Town Center Community Room Contact (805)298-1680 [Exp.#170]

Southern California Computer Society Meetings 4th Tues 7:00 pm, Farmers & Merchants Bank Rossmoor Mall 12535 Seal Beach Blvd, Los Alamitos For ▒ interested in IBM and compatible computers BBS and newsletter $20/yr Contact Jim Perry (562)429-3060 [Exp.#170]

Thousand Oaks Personal Computer Club (TOPCC) Meetings 4th Thurs ▒ ▒ Senior ▒ 1385 E Janss ▒ Thousand Oaks Programs are targeted at no ▒ to

Pasadena IBM Users Group. Meetings 3rd Wed., 7:00 pm, 2184 N Lake Ave., Altadena Speakers ▒ hardware/ software, demonstrations, BBS Call Steve Bass (818)791-1300 [Exp.#169]

Saddleback Valley PC Users Group. Meetings usually 3rd Sat 9:00 ▒ Saddleback College, 28000 Marguerite Pkwy Room 205, Business ▒ General Studies Bldg., Mission Viejo Vendor presentations, free software, newsletter, Q&A, friendly people Novice and advanced $20/year Contact Carolyn, (714) 496-9997 or Jvman1 @aol com [Exp.#171]

San Gabriel Valley Technology Users Group Meetings 2nd Fri, 7:00 pm, Arcadia Park Senior Citizen's Center 405 S Santa Anita Ave., Arcadia Support for Tandy and IBM compatibles BBS ▒ list ▒ ▒ RAM ▒ Contact Jack Mock, (818)578-0411 [Exp.#166]

INTERNET

Orange County Internet Group (OCIG). Meetings 2nd Tues 7:00 pm, Burbank Federal Bank, 7119 Topanga Canyon Blvd Canoga Park Ample parking Contact (818)249-1629, 884-9441, ▒ URL http //www.tugnet.org [Exp.#171]

OS/2 Internet Special Interest Group. Meetings 4th Mon 7:00 pm, 600 Anton Blvd 2nd floor (at Avenue of Arts), Costa Mesa Free parking Contact Dave Watson, (714)534-4456 [Exp.#169]

KAYPRO

KAYOS Kaypro User Group. Meetings 4th Tues of even months 6:00 pm El Segundo Library Mariposa and ▒ streets Contact (310)379-▒ [Exp.#171]

MACINTOSH

Champions Of The Mac Professional (CHOMP) Meetings 4th Thurs 7:00 p.m. Bauer Forum Claremont McKenna College Claremont Q&A ▒ of useful software vendor presentations

expert levels of computer knowledge Contact Harry, (805)455-8325 or Eli, (805)496-8053 [Exp.#171]

Tug-Net Meetings Every Thurs, 7:00 pm, Glendale Federal Bank, 7119 Topanga Canyon Blvd Canoga Park Ample parking Contact (818)249-1629, 884-9441, ▒ URL http //www tugnet.org [Exp.#171]

Valley Computer Club (VCC). Meetings 2nd Tues 7:00 pm, Burbank YMCA, 321 E Magnolia Blvd, Burbank BBS, PD library, SIGs, newsletter All welcome Contact Estella McClintock, (818) 848-1946, or Grayce Hruda, (818)842-3707 [Exp.#171]

Los Angeles Macintosh Group (LAMG). Meetings ▒ Thurs, 7:00 pm, Santa Monica High School's Barnum Hall, 601 Pico Blvd Vendor presentations, raffle, 25+ SIGs, seminars, BBS monthly magazine Guests welcome Contact (310)319-1821 [Exp.#166]

Macintosh User Group Serving the Inland Empire (MUGSIE). Meetings 3rd Thurs., 7:00 pm, Palm Baptist Church Riverside Q&A presentations, raffles, hardware upgrades, SIGs Contact (818)812-2539 or rpumanb@post aes con [Exp.#170]

OMUG/LA, The Lesbian, Gay, Bisexual Macintosh Users Group. Meetings 2nd Mon, 7:30 pm, Los Angeles Gay and Lesbian Community Services Center, 1625 N Schrader Blvd Los Angeles Social, business, and technical network for lesbian, gay, and bisexual Mac users. Contact (213)222-OMUG or OMUGLA@aol com [Exp.#171]

South Bay Apple Mac User Group Meetings Last Wed , 7:30 pm, Knob Hill Community Center 320 Knob Hill Redondo Beach Newsletter PD library demos and software rallies Contact C W Mitchell (310)644-3315 [Exp.#168]

Southern California Macintosh Owners/Users Group (SMOG). Meetings 2nd Sat , 9:30 am, Western Digital Bldg, off 405 Freeway at 14

exchange views, opinions, expertise Contact Al Seltzer, (909)626-7784 or AlSeltzer@aol com or Mitch Cohen, (909)605 1000 ext 11, or URL http //www chompmug org [Exp.#171]

Fortune, Irvine Vendor and member presentations newsletter information exchange, beginner to experienced C++ Phillip Christian (714)496-7356 [Exp.#168]

Whittier Area Macintosh User Group. Meetings 2nd Sat , 9:30 am CFI Church 14322 Telegraph Rd Whittier Beginner to experienced Q&A demos raffle hot disk SIGs, newsletter Contact http //www geocities com/SiliconValley/Pines 6042/ [Exp.#171]

NETWORKING

OCNET—Orange County NetWare Users Group. Meetings 2nd Tues 6:30 pm Novell 18101 Von Karman 5th floor, Irvine Specializes in Novell NetWare solutions Contact (714)258-7832 [Exp.#171]

Orange County Network Gaming Group Play multiplayer games on a LAN Date/time/location to be announced Contact Net (714)840-9011 autoexec pacbel net [Exp.#171]

OS/2 Networking Special Interest Group Meetings 3rd Sat 11:00 am, 600 Anton Blvd 2nd floor (at Avenue of Arts), Costa Mesa Free parking Contact Steve Schiffman (714)531-0378 [Exp.#169]

OS/2

Southern California ▒ User Group (SCOUG). Meetings 3rd Sat 9:00 am, 600 Anton Blvd 2nd Floor (at Avenue of the Arts), Costa Mesa Free parking Exchanging information and providing mutual assistance to users about OS/2 Warp Free Contact Roll ▒ White, (310)493-1674 [Exp.#169]

Wireless In Ulaan Bataar

called FreeWave Technologies, Inc. (*http://www.freewave.com/*). They make a spread-spectrum radio that can send data at 170Kbps over the air and interfaces to a computer via a serial data interface (RS-232) at 115.2 Kbps. The radio operates in the 902-928MHz part of the spectrum, one of three bands utilized by Part 15 devices in the US. These radios put out 1 watt of power; using various antenna configurations we have been able to obtain/send data with them distances of up to 60 miles. (For more information on the use of these sorts of unlicensed spread-spectrum radios, check out our WFT project Web site at *http://wireless.oldcolo.com/*).

We learned that the 902-928MHz band was not completely available for our use in Mongolia, since the commercial cellular telephone network there used GSM technology which operated in a portion of the band from 902-915 MHz. In order to use the FreeWave radios in Mongolia, we had to make two things happen.

We first got DataCom to obtain from the Mongolian government permission to operate the radios in the 915-928MHz part of the spectrum, avoiding the conflict with the GSM cellular network. We next got FreeWave to provide us with a special version of their radio which would operate in this smaller portion of the 902 MHz band. As it turns out, this was not difficult—they had already encountered the same problem when they first entered the Australian market, which uses GSM cellular in the same band.

In order to connect each site's radio to the local LAN we determined that we needed a low-cost Internet router that could be installed and maintained at each location. For the WFT project, we had already developed such a router based upon the widely available Linux operating system and a low-cost PC. We decided to use this approach in Mongolia, as we already had a great deal of experience with this router and an attached FreeWave radio. Aside from Linux, all a PC needed to function as a special purpose IP router was a high-speed serial card that would support an interface speed of 115.2Kbps and enough RAM to allow Linux to function properly (in this case we used 16MB).

Also important were the antennas and feedlines. It was clear that we needed an omni-directional antenna for the DataCom site, since it was the point-of-presence (POP) for all Internet services and each remote site would have to connect to it. For the remote sites, we would require a directional antenna that could focus all of the available energy from the radio on the POP.

Although the distances involved in the Ulaan Baatar network would be a good deal less than we had been used to in the US (average about 20 miles), we decided to use the same high-gain omni and directional antennas that we had used here rather then taking the time to find lower-gain alternatives—it's better to have more antenna gain than you need than to get there with less and find out that you need more. We also decided to use the same low-loss coax feedline (LMR-400) to connect the radio to the antenna that we had been using in the WFT project.

Even with all the up-front analysis of each site's requirements, we still had no idea of the exact amount of feedline that we would require. As a result, we decided to take three times as much as we thought we'd need.

Finally, there was the issue of electrical power. In Mongolia, they use 220 VAC, so we had to obtain the necessary power adapters and connectors to insure that the radios and routers could all operate on local AC power.

As it's common practice with an expedition of this sort to a remote part of the world, we made sure that we had spares for all of the key equipment, especially routers and radios. When it came to just how we were going to get all of the equipment to Mongolia, the NSF intervened

Resources

USER GROUPS

PROGRAMMING

OS/2 Programming Special Interest Group. Meetings: 3rd Sat., 11:00 am, 600 Anton Blvd., 2nd floor (at Avenue of Arts), Costa Mesa. Free parking. Contact: Terry Warren, (714)633-5467. [Exp.#169.]

WINDOWS

Microsoft Windows NT Study Group. Meetings: 2nd and 4th Sat., 6:00 pm, MicroLAN Technologies, Inc., 110 N. Vincent Ave., West Covina. A professional association of Windows NT enthusiasts to enhance our skills, knowledge, and career opportunities. Contact: Manmohan Bharma, (818)339-1391 [Exp.#166.]

Power Graphics User Network (PGUN). Meetings: last Tues., 7:30 pm, Glendale Windows-based graphics and publishing applications (CorelDRAW, Ventura Publisher, Picture Publisher, Kai's PowerTools) and techniques. Contact Randy Tobin, (818)955-5830 [Exp.#169.]

ASSOCIATIONS

AITP—California Southland Association of Information Technology Professionals. Meetings: 3rd Wed., 6:30 pm, Gateway Plaza Holiday Inn, 14299 Valley View, La Mirada (I-5 at Valley View exit) A professional association providing new technology, management topics, networking, and education to the Orange County/L.A. area. Contact Cathy Grammer-Margolin, (714)647-1617 845-5950. URL http://members.aol.com/calsocudmp. [Exp.#166.]

Independent Computer Consultants Association. Meetings: 2nd Thurs., 6:00 pm, Sportsman's Lodge, 12825 Ventura Blvd., Studio City. An organization promoting professionalism, expertise and ethics in the provision of computer services and awareness of the availability of such services by independent professionals. Call Ben Shulman, (213)872-1811 [Exp.#166.]

Wireless In Ulaan Bataar

Wireless

and made arrangements with the US ambassador in Mongolia that allowed ▬ to ship everything via diplomatic channels (the famous "diplomatic pouch") Thus we were able to avoid the normal problems encountered using commercial shipping firms and dealing with customs procedures

▬ turns ▬ that spread-spectrum radios cannot be exported to countries such ▬ Mongolia without ▬ special export permit from the US government. Obtaining such a permit can take anywhere from three to ▬ months. As we were trying to get the expedition completed before the harsh Mongolian winter started (December-March) we were fortunate in being able ▬ bypass that requirement by shipping the radios the way that we did.

The downside in using the diplomatic channel for shipping is that once you put your shipment into the system, you only have a rough idea when it ▬ going to arrive at its destination Thus we had to use estimates on the time it took other items to arrive in Mongolia ▬ the basis for determining just when the expedition team itself should arrive As it turned out, we were lucky in that most of the equipment arrived before we arrived in Mongolia, with the exception of a few pieces that arrived after we had been in-country about a week

Installation

A team consisting of Glenn Tenney (of Fantasia Systems, San Mateo) and myself left for Mongolia ▬ October of last year After we had arrived, made the initial visit to DataCom, and inventoried our equipment that had arrived (except for the few missing items), the first order of business was to survey all of the chosen sites in order ▬ determine just what would be needed ▬ deploy the equipment.

We were shocked ▬ find that DataCom was surrounded by high-rise buildings that effectively blocked line-of-sight to all of the sites where installations were to have taken place. One of the key factors in getting this type of low-power radio ▬ work properly ▬ ▬ have a clear line-of-sight path to any location that you wish ▬ contact Without major obstructions, it is possible to establish communications over fairly long distances with obstructions it is usually not possible ▬ go ▬ than a few hundred feet. Given what we ▬ from the DataCom site, it looked like it was time to ▬p things up and get on the way back home However, we decided ▬ make the best ▬ a bad situation, attempt ▬ proceed any way, ▬ see just what could ▬ accomplished

First, we installed the first radio and router at the DataCom site. In order to maximize the power output to the antenna from the radio, ▬ mount-

ed the radio on the roof of the building just a few feet from the antenna ▬ a small equipment shed This approach allowed us to use just a short coax feedline to the antenna and then a rather long serial-data cable to the router which was on the second floor of a four-story building Since this location was the main hub for the wireless network, we used an omnidirectional antenna

We next set up a mobile radio so that it could be powered by batteries and carried about in a car with one of the directional antennas. We decided that we wanted to travel around town and see if it was possible to receive the signal at any distance from the POP location To our surprise, we were able to get a good signal at most of the sites where we were to have installed a radio—all without having line-of-sight to the POP. After some analysis, we were able to determine that even though Ulaan Baatar is populated with a large number of high-rise buildings, the materials used in their construction are such that they appear to be effectively transparent at the frequency of the radio signals that we were using. This windfall allowed us to proceed with installation at each site as planned

The most difficult part of the installation is the proper placement of the antenna and its connection to the radio The major goal is to minimize the length of feedline used to connect the radio to the antenna—the basic rule being that the longer the feedline, the less power actually gets to the antenna, and hence the lower the signal quality at the remote location. This ▬ where we spent most of our time during the next two and a half weeks Each site had to be surveyed, then we had to work with the local people in charge of that site to convey to them what needed to be done and make ▬ that the proper permissions were obtained ▬ do the work.

At some sites, nothing major was required, as the antenna and the radio/router ended up being in the same room. In other sites, such as the US Embassy, the antenna had to be mounted on the roof and feedline run several floors to get to the radio and the router Once the site preparation was complete, it was a very simple matter to install the radio and router.

One major problem developed, once we were over the site preparation issues and got to testing the radios We found the PCs we selected were unable to have their serial ports run at speeds over 19.2Kbps without data overruns; as ▬ ▬ we tried to send data ▬ the radios ▬ any speed over 19.2Kbps, nothing worked After ▬ few days spent in investigating the cause of the problem, we discovered that even though the technical specifications of the PCs indicated that the on-board serial hardware

could be run at speeds up to 115.2Kbps this was not the case DataCom has some new Pentium PCs that arrived while we were there intended for a public Internet access center When we installed Linux on those machines configured it as a router and set the serial interface to the 115.2Kbps speed everything functioned properly

As luck would have it, we were able to contact someone coming over from the US to Mongolia This person brought the necessary number of high-speed serial cards over, we were able to install them in the PCs that we had and get them to function properly at the higher datarate. As a result, we were finally able to leave Mongolia, after a slightly longer stay than we'd planned, with the wireless network installed and good connections to the seven remote sites

The network that we installed is still up and running today The staff at DataCom has been able to maintain the network and even extend it with additional sites.

Lessons Learned

Here ▬ a summary of some of the key things we learned as a result of this effort

• A good site survey ahead of installation is the key to the installation's success The specifics of a survey require people with a good deal of expertise in several areas. If you can't get those people to the site ahead of time to perform the survey, success can be in serious doubt in such remote locations as Mongolia

• Always make sure that you test the equipment that you're using before you ship it to a remote location Never believe the specifications for a product until you've tested it yourself!!!

• Radio is still something like a black art (i e magic) There is always something new ▬ be learned Until we had gone to Mongolia and did this installation, we would have never believed that you could deploy such a wireless network in a dense urban area without having line of sight to all locations

• Low-cost spread-spectrum radio products that are being used in increasing numbers in the US to deliver access to the Internet can be successfully deployed in developing countries with limited expertise in both radio and Internet technologies

In closing, we'd like ▬ take this opportunity ▬ acknowledge the help and assistance of Steve Goldstein of the NSF, without whose caring and wisdom this effort would not have been possible ▬

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ADVERTISERS INDEX

CLASSIFIED ADVERTISING SECTION STARTS ON PAGE 225

DVORAK'S LAST COLUMN • BY JOHN C. DVORAK

The Best Net Humor Of 1996

Or, Somebody Has To Promote This Stuff

This column salutes the best Net Humor that floated around the Internet last year. I've observed that this year's material is simply not as good. Most people on the Net become part of a giant joke transference system, and many of these gags have passed through thousands of desktops.

Here are a couple of items to which I present the *MicroTimes* Best Humor Award. Will the authors please claim the award!

Most Useful Humor

The first award goes to a posting of useful dumb quotes that can spruce up any speech, to wit:

"Computers in the future may weigh no more than 1.5 tons."

—*Popular Mechanics*, forecasting the relentless march of science, 1949

"I think there is a world market for maybe five computers."

—Thomas Watson, chairman of IBM, 1943

"There is no reason anyone would want a computer in their home."

—Ken Olsen, president, chairman and founder of Digital Equipment Corp., 1977

"The concept is interesting and well-formed, but in order to earn better than a 'C,' the idea must be feasible."

—A Yale University management professor in response to Fred Smith's paper proposing reliable overnight delivery service. (Smith went on to found Federal Express Corp.)

"Who the hell wants to hear actors talk?"

—H.M. Warner, Warner Brothers, 1927.

"I'm just glad it'll be Clark Gable who's falling on his face and not Gary Cooper."

—Gary Cooper on his decision not to take the leading role in *Gone With The Wind*.

"We don't like their sound, and guitar music is on the way out."

—Decca Recording Co. rejecting the Beatles, 1962.

"Heavier-than-air flying machines are impossible."

—Lord Kelvin, president, Royal Society, 1895.

"So we went to Atari and said, 'Hey, we've got this amazing thing, even built with some of your parts, and what do you think about fund-

ing us? Or we'll give it to you. We just want to do it. Pay our salary, we'll come work for you.' And they said, 'No.' So then we went to Hewlett-Packard, and they said, 'Hey, we don't need you. You haven't got through college yet.'"*

—Apple Computer Inc. founder Steve Jobs on attempts to get Atari and HP interested in his and Steve Wozniak's personal computer.

"Professor Goddard does not know the relation between action and reaction and the need to have something better than a vacuum against which to react. He seems to lack the basic knowledge ladled out daily in high schools."

—1921 *New York Times* editorial about Robert Goddard's revolutionary rocket work.

"Stocks have reached what looks like a permanently high plateau."

—Irving Fisher, Professor of Economics, Yale University, 1929.

"Everything that can be invented has been invented."

—Charles H. Duell, Commissioner, U.S. Office of Patents, 1899.

"Louis Pasteur's theory of germs is ridiculous fiction."

—Pierre Pachet, Professor of Physiology at Toulouse, 1872.

"640K ought to be enough for anybody."

— Bill Gates, 1981

Numerous so-called quotes were removed from this list because there was no genuine attribution. Those kinds of quotes tend to be pure folklore.

Best Analogy-Type Net Gag

This type of joke comes around each year and is derived from the old gags designed around a doll. You know—"If IBM made a doll it would run Cobol. Or if you wound it up it would move to Armonk." That kind of thing.

This is the famous Toasters Joke that ran around the Net last year. Will the author please come forward.

If IBM made toasters...

They would want one big toaster where people bring bread to be submitted for overnight toasting. IBM would claim a worldwide market for five, maybe six toasters.

If Microsoft made toasters...

Every time you bought a loaf of bread, you would have to buy a toaster. You wouldn't have to take the toaster, but you'd still have to pay for it anyway. Toaster 95 would weigh 15,000 pounds (hence requiring a reinforced steel counter top), draw enough electricity to power a small city, take up 95% of the space in your kitchen, would claim to be the first toaster that lets you control how light or dark you want your toast to be, and would secretly interrogate your other appliances to find out who made them. Everyone would hate Microsoft toasters, but nonetheless would buy them since most of the good bread only works with their toasters.

If Apple made toasters...

It would do everything the Microsoft toaster does, but 5 years earlier.

If Xerox made toasters...

You could toast one-sided or double-sided. Successive slices would get lighter and lighter. The toaster would jam your bread for you.

If Radio Shack made toasters...

The staff would sell you a toaster, but not know anything about it. Or you could buy all the parts to build your own toaster.

If Oracle made toasters...

They'd claim their toaster was compatible with all brands and styles of bread, but when you got it home you'd discover the Bagel Engine was still in development, the Croissant Extension was three years away, and that indeed the whole appliance was just blowing smoke.

If Sun made toasters...

The toast would burn often, but you could get a really good cup of Java.

Does DEC still make toasters?...

They made good toasters in the '80s, didn't they?

If Hewlett-Packard made toasters...

They would market the Reverse Polish Toaster, which takes in toast and gives you regular bread.

Send in your nominations for the Net Joke of the Year Awards. Put me on your "A" list for great Net humor at *dvorak@aol.com* . Also visit *http://www.dvorak.org* . ∎